

OCTOBER, 1958

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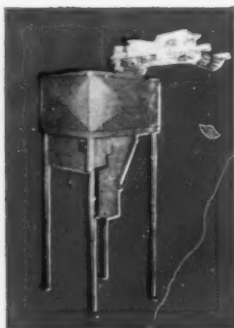
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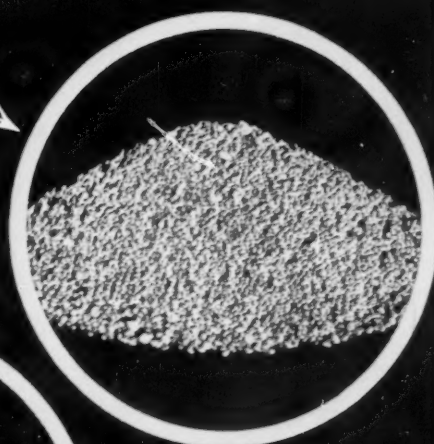
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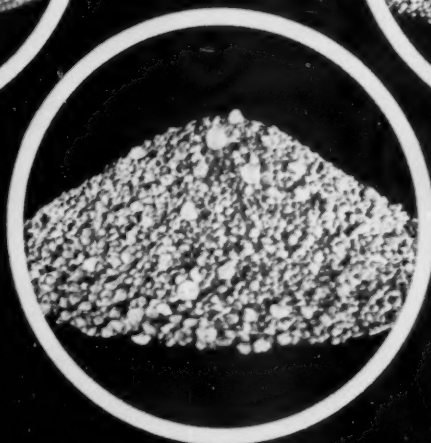
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October, 1958

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and **PLANT FOOD INDUSTRY**

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an almost total dependence on the dealer. Now these are city people. They are believers in brand names for other things. But they line right up with the farmer in letting the dealer choose the fertilizer for them.

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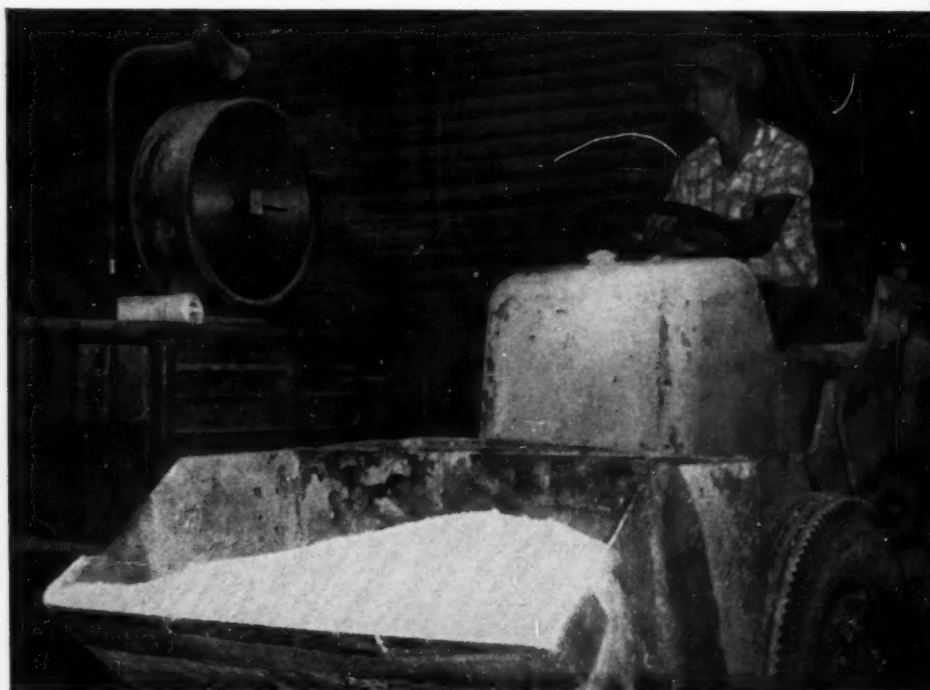
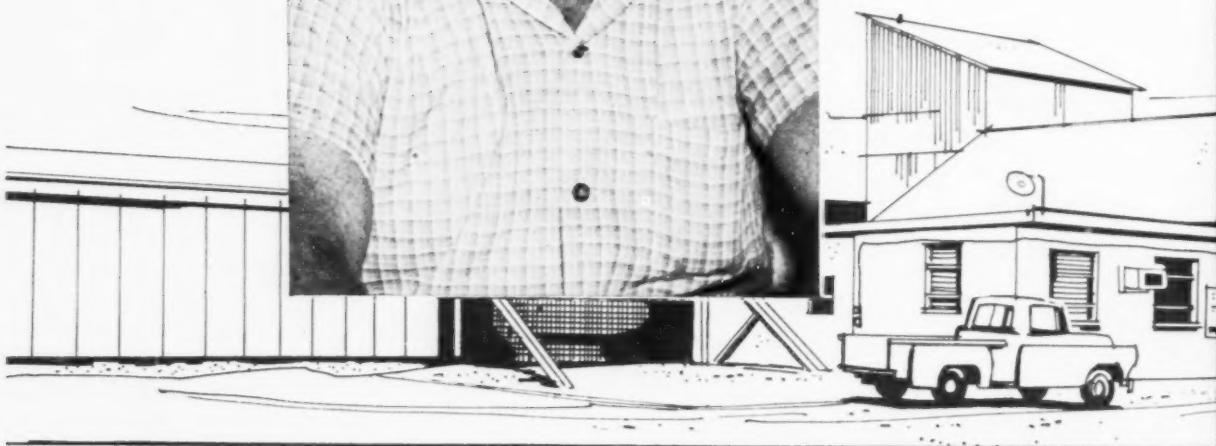
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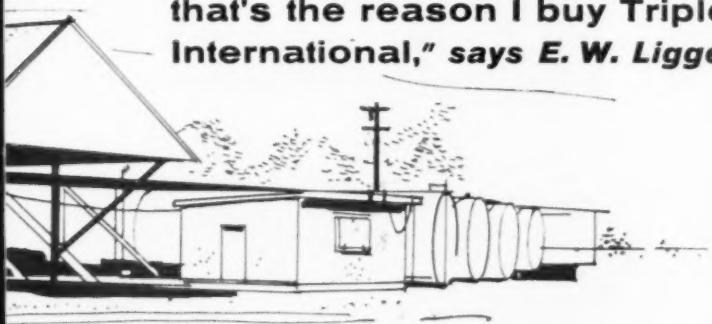
E. W. Liggett, General Manager, Bartlett and O'Bryan. Around Owensboro, 4-16-16 is the most popular of the 8 grades mixed at this plant.



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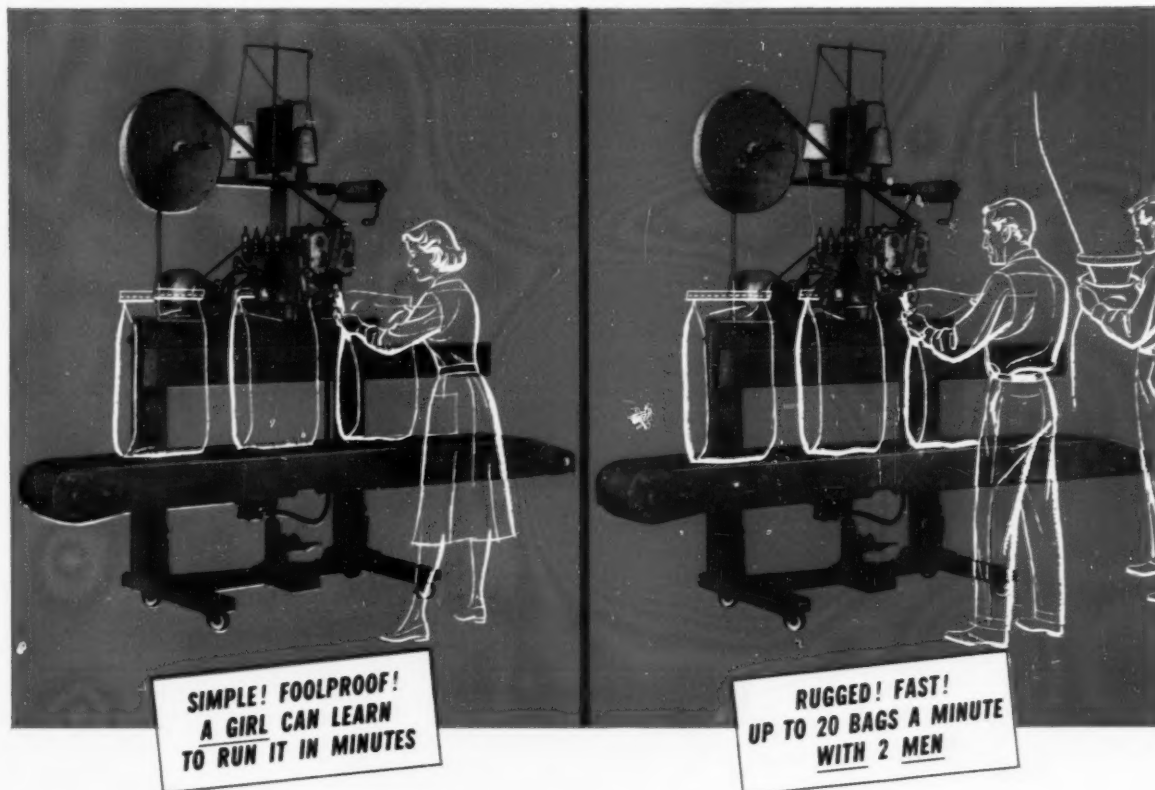


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EPON Resins	Shell Chemical Corp.	Houston, Texas
Bisphenol	Shell Chemical Corp.	Houston, Texas
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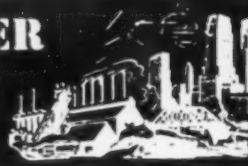
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JUST AROUND THE CORNER

By Vernon Mount



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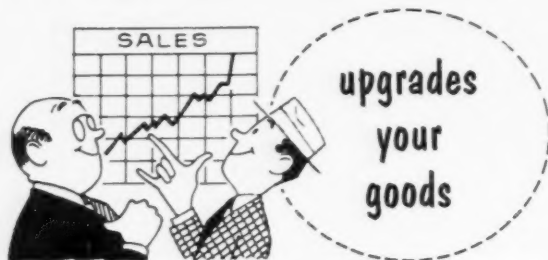
IF WE LEARNED NOTHING ELSE, it is still a lot. But we have been reminded that feather-bedding costs, that overtime is pretty expensive stuff. We have learned to pull in our belts, but not to lock them in that position . . . because we know what's coming, just ahead, and must be ready for the boom of the '60s.

Yours faithfully,

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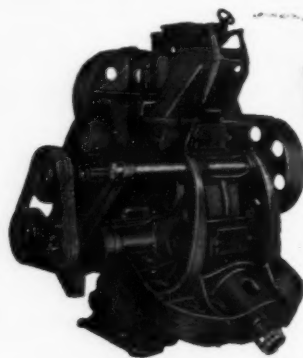


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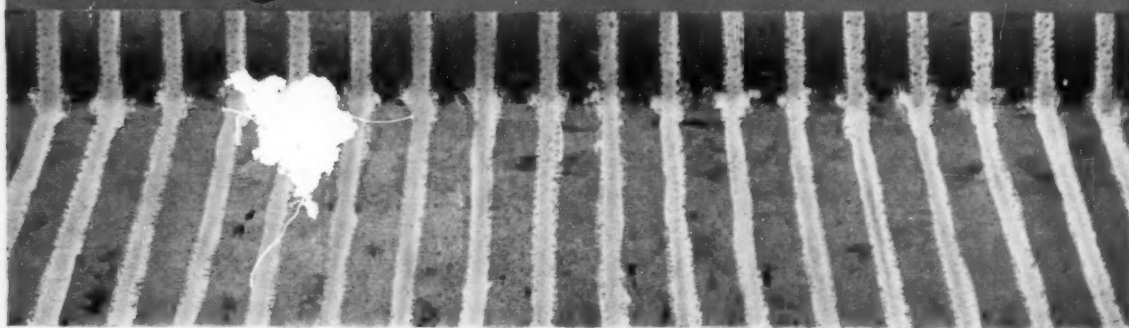
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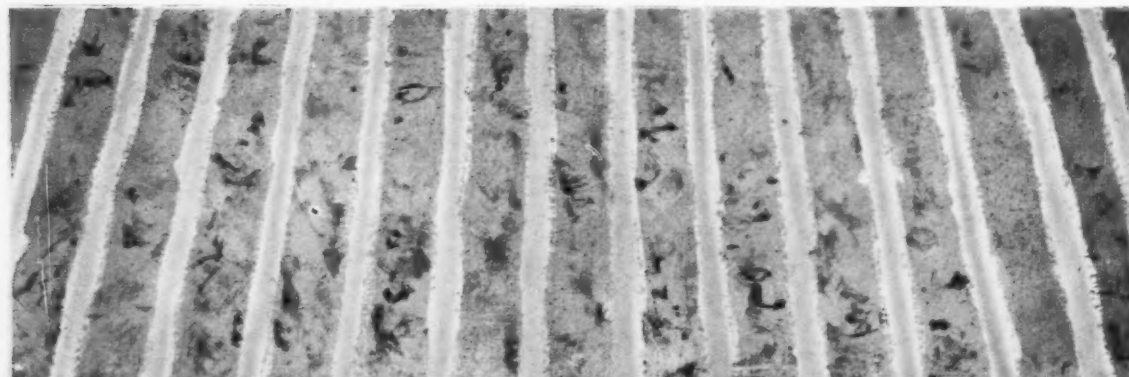
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Consumption of fertilizer nutrients in the United States since World War II has doubled from 3 million to 6 million tons of plant nutrients.¹ This represents a spectacular growth by an industry. Even more spectacular, however, has been the growth of fertilizer use in certain areas of the country. In the West North Central States, plant nutrient consumption during this decade has increased four times; in the East North Central States, it increased one and one-half times; and even in the South Atlantic States where commercial fertilizer has been used for over a century, plant nutrient use increased about thirty-five percent (see Table 1). This sudden expansion of the industry has been accompanied by marked changes in the marketing structure, not only as to form, participants, practices, and goods handled, but also as to the market and plant location, fertilizers demanded, and fertilizer uses.

Of interest to us, and of importance to the topic under discussion, are the reasons for this phenomenal expansion and growth in the fertilizer industry. What factors have brought about these changes and what are their significance for the future? Are there new forces in operation, or on the horizon having portent for growth in the industry and changes in the marketing structure for fertilizer? Reference to some of the historical developments in the industry will provide us perspective in these assessments.

The embryonic stages of development in the commercial fertilizer industry of the United States started about a century ago. Justus von Liebig's research work in plant-soil relationships in Germany had shown that nitrogen, phosphorus, and potassium were essential plant nutrients, and that often they were in too limited quantities in the soil. Thus, a principal reason and the attributes responsible for the effectiveness of manures to stimulate plant growth were made evident. Other pioneers like Lawes and Gilbert in England through their early production and experimentation with fertilizers of organic and/or byproduct origin did much to advance fertilizer technology.² Of course, prior to that time and over the centuries, farmers throughout the world had recognized the value of applying crop residues and manures on their land. So a market of sorts was ready made in some of the older agricultural areas of this country when the fertilizer industry first began to develop. Initially, im-

Changing Structure of the Fertilizer Industry

in the United States

by E. L. BAUM AND S. L. CLEMENT

Tennessee Valley Authority

Dr. Baum is chief of the Agricultural Economics Branch and Dr. Clement is chief of the Fertilizer Distribution Branch in TVA's Division of Agricultural Relations. The text of this paper was presented at a joint meeting of the American Farm Economic Association and the Canadian Agricultural Economics Society at Winnipeg, Canada, on August 20, 1958. The authors extend appreciation to John R. Douglas, Jr., and Harold G. Walkup for their assistance in developing the basic data necessary for the preparation of this paper.

ports of guano were used to supply industry's needs to fulfill farmers' demands for fertilizer. Sodium nitrate from Chile was also imported at an early date. Byproducts from slaughtering plants, coke-oven operations, and other industries plus imports provided the principal sources of fertilizer in the United States for many years. We shall consider briefly these historical developments for each of the primary nutrients at a later stage in the paper.

Fundamental to the organization of any industry are those agencies which actually handle the physical goods which are the products of the industry. In the fertilizer industry, these agencies are (1) importers and exporters, (2) primary producers, (3) brokers and wholesale distributors, (4) mixers, (5) retail dealers, and (6) ultimate users. Marketing functions performed by each of these agencies (except, of course, ultimate users) to a greater or lesser degree are as follows: Importers and exporters—jobbing; primary producers—production and/or wholesaling; brokers and wholesale distributors—wholesaling; mixers—wholesaling and retailing; retailers—retailing.

Changes in the marketing structure for fertilizer have been and are being "triggered" by technological, economic and sociological, institutional, governmental policy, and other dynamic factors. Our assignment is to present and analyze the nature of the fertilizer marketing structure as it exists today, the forces that have contributed to the present structure, and some changes that may occur in the future in the United States.

Commercial fertilizer entering the channels of commerce consists of a very large number of specific products each containing to some degree, nitrogen, phosphorus, and/or potassium.³ Some of these products—particularly the straight materials—are more or less suitable for further processing into other fertilizer products, or in their present form may be used for direct application to the soil. Additional nutrients (minor elements) essential to plant growth and in short supply in some soils frequently are added to mixed fertilizers.

Fertilizers were initially distributed in a solid pulverized form. At present, fertilizer materials are available as gases, liquids, and solids. The largest amount is still distributed in the solid pulverized form, although there has been a marked increase in the manufacture and use of granulated or pelletized dry form fertilizers to replace the pulverized form. Large increases are developing in the use of gaseous and liquid forms (especially nitrogen) in many of the principal agricultural areas.⁴

Market Structures

The structure of markets with which agricultural economists usually are concerned frequently resembles the shape of an hourglass; that is, from a widely scattered production area the product, through a series of steps, is concentrated and processed, and then, through another series of stages, the product in its final or near final form is distributed to widely scattered consumption areas.

The general structures of the fertilizer industry and of the markets

through which its products move represent typical nonagricultural industry configurations. This is a pyramid structure with a few producers at the top developing from concentrated sources of raw materials the primary semi-finished products of the industry. A fanning-out to a larger and larger area occurs as these primary products move through the marketing channels, and from points of further refinement or production.

Raw Materials Location Production Capacity

Each of the primary nutrients—nitrogen, phosphorus, and potassium—has its own unique dimension for extraction from nature. Fundamental to each of these processes is the utilization of highly concentrated sources of raw materials, and the existence of high value alternative commercial uses for that portion not utilized for fertilizer. The state of the arts continues to change as new techniques of production are developed. When these changes occur, significant changes in the structure of markets may reasonably be expected to follow.

Nitrogen Industry

The nitrogen fertilizer industry of today is composed of four principal segments in providing material for the fertilizer industry. In their relative order of importance these are: (1) synthetic, (2) coke-oven byproducts, (3) imported nitrogen salts, and (4) organic byproducts. At present, it is estimated that the first three sources supply about 97 percent of all fertilizer nitrogen used, and that about 90 percent of all fertilizer nitrogen moving through the marketing channels and being used has its source in a synthetic process.⁵

Some of the products which are representative of the various sources from which they come are as follows: (1) synthetics are such ferti-

lizers as anhydrous ammonia, nitrogen solutions, aqueous ammonia, ammonium nitrate, urea, ammonium phosphates, and ammonium nitrate-lime; (2) coke-oven byproducts are primarily ammonium sulfate; (3) imported nitrogen salts are primarily sodium nitrate and potassium nitrate; and (4) organic byproducts are such materials as dried blood, fish scrap, and tankage.

Prior to World War II, domestic production and imported materials each furnished about 50 percent of the nitrogen used in commercial fertilizer. The principal domestic production was in the form of ammonium sulfate, a byproduct of coke-oven operations. The imported material was principally sodium nitrate from Chile. Coke-oven byproduct production of ammonium sulfate was manufactured in about 80 plants having a rated capacity of 200,000 tons of nitrogen. However, these were used at only about 50 percent of capacity. These byproduct operations have not changed materially as to number of plants, capacity, or actual production since the mid-twenties.

In the immediate pre-World War II era, total imports of nitrogen to the U. S. reached approximately 220,000 tons, of which all except perhaps 5-7,000 tons were used annually for fertilizer. The production of synthetic nitrogen which was to develop into the major source for fertilizer nitrogen was concentrated in the hands of a very few producers prior to World War II. In fact, there were only three major producers. At this early date, these plants were producing cyanamide, urea, ammonia liquor, and various other solutions of nitrogen salts. Most of their production for use in fertilizer had been employed in the ammoniation of superphosphate to add a few units of nitrogen to mixed fertilizers and to give an improved mechanical condition.

The principal initial stimulus to the present day nitrogen industry was provided early during the World War II period. This was accomplished by the government's building ten large synthetic ammonia plants with a total capacity of about 800,000 tons of nitrogen. This capacity included that of the TVA plant at Muscle Shoals, Alabama, which was reactivated and completed after having been started by the government in 1916. By late 1942, it was evident that not all of the nitrogen that could be produced by the industry and government plants, would be needed for explosives or other military uses. At the same time, the need for fertilizer nitrogen to increase food production became increasingly acute. Hence, the TVA plant was released for the production of fertilizer grade ammonium nitrate in 1943 to aid in emergency food production. Private companies also decided to initiate the production of fertilizer grade ammonium nitrate, and the new nitrogen industry of today was launched in the United States.

In fiscal year 1943 there were two producers of solid fertilizer grade ammonium nitrate in the United States—the TVA plant at Muscle Shoals, Alabama, and Hercules Powder Company at Pinole, California. During this year, about 18,000 tons of ammonium nitrate fertilizer were used, of which TVA produced 75 percent. By 1957, American farmers were using over 1,000,000 tons of ammonium nitrate as a straight material for direct application on crops. Approximately twenty plants with a capacity estimated to be well over 1,500,000 tons of solid fertilizer grade ammonium nitrate are currently in operation.

Another important product and one which has had a powerful influence on market structure in the fertilizer industry of today is anhydrous ammonia, the initial and

Percentage Change in Fertilizer Consumption, by Regions, 1946¹ to 1957² (Years ending June 30)

	Regions of United States									Total United States
	New England	Middle Atlantic	South Atlantic	East North Central	West North Central	East South Central	West South Central	Mountain	Pacific	
	(Percentage of Increase or Decrease)									
Consumption of total primary plant nutrients	- 6.1	+ 33.7	+ 34.2	+ 165.3	+ 394.0	+ 70.4	+ 156.0	+ 248.6	+ 113.1	+ 94.8
Nitrogen consumption	+ 7.7	+ 81.0	+ 71.0	+ 416.2	+ 1591.4	+ 125.7	+ 277.6	+ 647.9	+ 176.3	+ 185.3
Phosphate consumption	- 9.3	+ 5.2	+ 5.8	+ 142.1	+ 263.9	+ 16.8	+ 83.2	+ 115.0	+ 44.7	+ 59.5
Potash consumption	- 5.7	+ 76.4	+ 68.3	+ 224.1	+ 466.6	+ 168.2	+ 165.9	+ 159.2	+ 49.0	+ 130.0
Average analysis of all fertilizers	+ 14.5	+ 22.0	+ 25.2	+ 55.9	+ 63.9	+ 37.3	+ 71.6	+ 43.2	+ 68.2	+ 45.1

¹Mehring, A. L., Adams, J. R., and Jacob, K. D., *Statistics on Fertilizers and Liming Materials*, USDA Statistical Bulletin No. 191, ARS, April 1957.
²Scholl, W., Davis, M. M., and Crammatte, F. B., *Consumption of Commercial Fertilizers and Primary Plant Nutrients in the U. S.*, ARS, 41-19-1, June 1958.



Arcadian® News

Volume 3

For Manufacturers of Mixed Fertilizers

Number 10

New Ammoniation Technique Yields—

UP TO 16% NITROGEN IN MIXED FERTILIZERS ALL FROM SOLUTIONS

For some time now Nitrogen Division, Allied Chemical, technical service men have been producing pilot plant quantities of high-quality, complete mixed fertilizers containing up to 16% nitrogen, with all the nitrogen derived from Nitrogen Solutions. These high-nitrogen grades can be economically produced in good physical condition.

The ammoniation technique involves the use of sulphuric acid with selected NITRANA® Nitrogen Solutions and no other nitrogen carrier. Certain modifications of standard ammoniating equipment are essential in this development, however as much standard apparatus as possible was used in the procedure. Operating techniques, with guides as to type

of Solution, strength of acid, temperatures and other factors, have been worked out.

Based on these studies, several fertilizer manufacturers are planning to install equipment and preparing to use this new technique in their mixed fertilizer plants, with the advice and assistance of Nitrogen Division technical service men. They plan to produce such grades as: 14-7-7, 16-8-8, 14-0-14, 15-10-10, etc.

Development of this improvement represents another advance in the technique of manufacturing better fertilizers at lower cost. For information, contact Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N. Y.

16-8-8 Produces Big Yields in Wisconsin Pasture Tests



Spring top-dressing of Wisconsin pastures with 500 pounds of 16-8-8 per acre this year produced as much as 7,650 pounds increase in dry weight forage yield and 5.63% higher protein content than unfertilized pastures. These huge yield increases on pasture tests supervised by Extension Specialist C. J. Chapman led him to say: "It was the most amazing demonstration I have seen in 42 years of extension work."

College Recommends It

As a result, the University of Wisconsin is recommending that the fertilizer industry prepare to supply high-nitrogen 2-1-1 ratio fertilizers in the state next

spring. Professor Chapman plans to set up many additional 16-8-8 pasture demonstrations in 1959, to show Wisconsin farmers this highly profitable way to improve pastures.

The highest forage yield on the six test farms using 16-8-8 in 1958 was 9,487 pounds dry weight per acre, compared to 1,837 pounds without fertilizer.

With 16-8-8, the protein content of the forage tested 15.63% from a June 20 cutting. Samples taken earlier in the spring from pastures fed high-nitrogen mixed fertilizer have shown 20% or even higher protein content. Even at the figure of 15.63% protein, the farmer got the equivalent in pasture forage per acre of an extra 76% bags of 15 to 16% dairy feed.

Professor Chapman feels that "a 2-to-1 ratio of nitrogen to phosphoric acid and potash more nearly fits the requirements of pasture grass on our silt and clay loam soils than a 1-1-1 ratio."

Opens Steady Market

Years of pasture tests in Wisconsin have shown that 10-10-10 fertilizer produced big improvements in yield, protein, and early pasture turnout over no fertilizer or straight nitrogen. Now 16-8-8 or a 2-1-1 ratio promises even better yields and profits.

Some farmers have used 10-10-10 and straight nitrogen in alternate years, to get a similar effect. Under the new Wisconsin recommendation for 16-8-8 or a 2-1-1 ratio, fertilizer manufacturers will have a steady market for one analysis of fertilizer. Likewise farmers will have a steady supply of this ideal high-nitrogen pasture plant food combination. The 16-8-8 fertilizer is also excellent for lawns, golf courses and other tended turf markets.

Fertilizer Sales are Stymied by Poor Application Methods



Modern rolling disk attachment for planters. Gives precise control of starter fertilizer placement.

You might be surprised if you checked on how many fertilizer sales you're *not* making because farmers in your area do not have the proper application equipment! Unfortunately, this sales bottleneck exists in every section of the country. And it has been all too effective in preventing the mixed fertilizer industry from reaching its full sales potential. We see dramatic proof of this in the starter fertilizer picture.

Starter Fertilizer is Biggest Seller

It is generally conceded that mixed fertilizer is the best carrier of plant food for starter use. In fact, starter fertilizers—at recommended application rates—have demonstrated profitable response on *all* major crops—even where other fertilizer applications are heavy, and where soil

fertility is high. As a result, conservative estimates show that starter fertilizers make-up *more than two-thirds* of the total mixed fertilizer sold annually in the United States.

Has Even Bigger Potential

And yet, despite this large percentage of gross fertilizer sales, starter products have only scratched the surface! In this country, there are many areas of heavy crop concentration, particularly in the Midwest corn belt, where *less than 10%* of the planters and seeders are equipped with starter fertilizer attachments. Even in sections where fertilizer has been used the longest, much of the starter equipment is of an obsolete type not adapted to do a good job of placement with modern fertilizers.

Modern Equipment is the Answer

Today, most agronomists recommend placing starter fertilizer for corn two inches below and two or three inches to the side of the seed in single band applications. Old type split boot and shoe attachments cannot do this consistently. But it's no problem for the modern rolling disk attachment, introduced a few years ago. This device gives excellent control of placement, assuring better results under virtually all soil conditions.

Although college and trade groups have widely publicized this new starter fertilizer equipment, it is obvious that a major selling job still remains. Even in broadcast, top-dress and side-dress application a great proportion of the nation's farmers do not have the proper equipment for modern, mixed fertilizer. To repeat the point made earlier: mixed fertilizer has a *tremendous sales potential*—to be realized only when farmers have the proper application equipment!

Who Will Do the Job?

Naturally, the responsibility for getting modern equipment to the farmer lies principally with the equipment manufacturer. But since mixed fertilizer benefits so directly, it behooves the industry to work closely with equipment manufacturers and dealers in promoting the use of better application equipment.

How to Go About It

Right now you should be setting up a program for stimulating the sale of fertilizer equipment for use next spring. Make sure your salesmen are familiar with the types of fertilizer application equipment available to farmers in their

territories. Urge your salesmen and dealers to work with implement dealers in promoting sales of suitable equipment.

If farmers will not purchase the necessary application equipment themselves, try to get dealers to make equipment available on a rental or loan basis. Or you might arrange to have properly equipped custom operators cooperate with your sales program. In areas where implement

dealers are not active, you could encourage your dealers to take on a line of fertilizer application equipment as a service to their farmer customers.

Whatever you do to promote application equipment sales, you can be certain that it will be effort well spent. The pay off is direct: in more fertilizer sales for you . . . in customers more satisfied with your product!



Best Way to Win Customers: Show Them Fertilizer Pays!

The most effective way to keep a farmer sold on your fertilizer is to show him the actual profit figures on his own farm. It takes you only a few hours at harvest time, but it can be worth its weight in *extra sales* this winter and in early spring! For example, here is how you check corn yields—

All you need is a steel tape, a bag and a scale. Follow this simple procedure:

1. Measure two 1/100th acre plots in each area: one from a well-fertilized area, and one from a check strip.

1/100th acre equals:

- 2 rows 36 in. apart and 72.6 ft. long
- or 2 rows 38 in. apart and 68.8 ft. long
- or 2 rows 40 in. apart and 65.4 ft. long
- or 2 rows 42 in. apart and 62.2 ft. long

2. Shuck every ear from each plot and weigh accurately. (3 pounds per check

strip is approximately 5 bushels per acre.) If the two checks per acre vary more than 15%, an additional check or two should be made, and the results averaged. Also, the corn stalks should be counted and recorded for each check made. Thin stands often do not respond to heavy fertilization.

3. Take an accurate moisture sample and convert to 15% moisture.

4. Figure yield according to this formula: Weight of sample (corrected for moisture) ÷ 70 x 100 = bushels per acre.

5. Compute yield difference and net profit from fertilizer.

You'll find it pays off in steady sales and *extra sales* to make these checks for all your new customers . . . and periodically for old customers. Start this fall!

HERE'S THE BIG LINE OF



When you purchase your nitrogen requirements from Nitrogen Division, Allied Chemical, you have many different nitrogen solutions from which to select those best suited to your ammoniation methods and equipment. You are served by America's leading producer of the most complete line of nitrogen products on the market. You get formulation assistance and technical help on manufacturing problems from the Nitrogen Division technical service staff. You benefit from millions of tons of nitrogen experience and the enterprising research that originated and developed nitrogen solutions.

NITROGEN SOLUTIONS

	CHEMICAL COMPOSITION %					PHYSICAL PROPERTIES			
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60°F	Approx. Vap. Press. at 104°F per Sq. In. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	26
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.188	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.052	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
6	42.0	19.5	66.3	6.0	8.2	9.3	1.178	10	34
10	44.4	24.5	56.0	10.0	9.5	11.0	1.108	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.081	25	-7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
15	44.0	28.0	40.0	15.0	17.0	12.7	1.052	29	1
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.925	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.972	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	24.3	0.618	211	—

Other ARCADIAN® Products: N-dure® • UREA 45 • A-N-L® Nitrogen Fertilizer
Ammonium Nitrate • American Nitrate of Soda • Sulphate of Ammonia

NITROGEN DIVISION

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most concentrated nitrogen product from the synthetic process.⁶ In 1943 there were 17 anhydrous ammonia plants in the United States, including 8 government plants which had been constructed at that time. The total number has now been increased to over 60, with large expansions in capacity, installed at most of the original locations. Capacity for production at these plants is not known precisely, but it is estimated to be over 4,000,000 tons of nitrogen annually, which includes that available for industrial use. This represents a ten-fold increase in productive capacity since 1940 and a five-fold increase since 1943.

There have been and continue to be marked changes in the forms of nitrogen fertilizer available for use on farms. The use of solid ammonium nitrate as a straight fertilizer material has increased to over 1,000,000 tons annually. Anhydrous ammonia, liquid ammonium nitrate solutions, and various other liquid nitrogen solutions are receiving increased attention and use. Very high analysis materials, such as diammonium phosphate containing 21 units of nitrogen and 53 units of available phosphorus pentoxide, are becoming increasingly available. And on the horizon is a whole series of mixtures of nitrogen and phosphoric acid, both solids and liquids, which may soon flow through the marketing channels and be used in complete mixtures and also directly on American farms.

The nitrogen industry since World War II has noticeably expanded, not only as to capacity and production, but also as to diversity of products and as to larger numbers of companies in the business. This has resulted in increased competition in the nitrogen segment of the fertilizer industry. Instead of having a "big Four," there are now at least 17 major producers of synthetic nitrogen products and these are widely distributed throughout the United States. Most of these companies are primarily chemical or petrochemical companies. Technical advances, low cost government surplus plants, rapid depletion allowances, opportunities for diversification, and the development of an expanding fertilizer market all have played their part in bringing many of these newcomers to the industry.

The nitrogen industry of today in the United States is a new and expanding industry. For the most part, the industry has grown out of the technological changes developed during World War II and the en-

couragement to expansion given by the government. The shortage of labor engendered by the war, improvements in farm machinery, recognition by farmers that they must become more efficient in production, the lowered costs of fertilizers relative to other factors of production, and improved knowledge among farmers of the effects on yields of nitrogen applications along with a quick return on investment, all give impetus to farmer demand for fertilizer. All these conditions still exist to some degree.

Phosphate Industry

In contrast to the synthetic nitrogen industry, the phosphate industry of the United States is much older. Due largely to limited areas of suitable phosphate minerals which are owned or controlled by a limited number of firms, the competitive aspects of the industry are quite stable. Recent estimates indicate that of the total United States phosphate reserves in the three areas in which economical production can be achieved, 38 percent is located in Florida, 61 percent in the western fields of Utah and Idaho, and 1 percent is located in Tennessee. However, the location and percentage of reserves are not a significant indicator of quantities produced in the various fields. At present, three-fourths of the phosphate rock mined in this country comes from the Florida fields, and about equal amounts of the remaining 25 percent from the western and Tennessee fields.

The western fields were not tapped extensively until the late 1940's, although the presence of these reserves had been recognized for a long time. In 1934, only 1 percent of the rock mined came from the western fields and in 1946 only 7 percent came from there, yet by 1957 13 percent of all rock mined came from the western fields.

There are some indications that two TVA developments in the field of phosphorus will accelerate the production of phosphatic fertilizers from western deposits. These are (1) the development and wide-scale introduction of calcium metaphosphate containing 62 to 64 percent phosphorus pentoxide, and (2) the more recent development of superphosphoric acid, containing approximately fifty percent more phosphorus pentoxide than the normal commercial product. At least one new plant is under construction in the western area to utilize these developments. The high concentration of

plant nutrients in these products makes it economically feasible to ship them over a wide area from the point of production.

During the seventy years prior to 1930, some 200 phosphate fertilizer plants had been built with an annual capacity of about 1,600,000 tons of available phosphorus pentoxide equivalent. These facilities were used at less than one-half capacity. The principal product developed for fertilizer was ordinary superphosphate containing up to 20 percent of available phosphorus pentoxide. By the late twenties, five concentrated superphosphate plants were constructed by private industry which permitted the production of a 45 percent available phosphorus pentoxide product. However, very little of this product was sold to farmers either as a straight fertilizer material or in mixtures.

Concurrently with TVA's production of concentrated superphosphate and the encouragement of its use by farmers and mixers through its fertilizer education program and other public programs, the industry has been encouraged to increase the production of this more concentrated material. Ordinary superphosphate still occupies an important place among phosphate materials, having doubled production to over 1,500,000 tons of available phosphorus pentoxide since 1930. During the same period, its production capacity has also approximately doubled. The primary phosphate material showing the most marked increase in production is concentrated superphosphate. From an annual production and use of approximately 30,000 tons in 1934 its use has increased to over 750,000 tons of available phosphorus pentoxide in 1957. A large potential increase in the production of this material exists in the western fields, where several companies are in the process of increasing their capacity for production.

Another technological change which has developed in the phosphate industry perhaps as a direct result of changes in the nitrogen industry is the production of ammonium phosphates. Production of these materials (primarily 16-20-0, 11-48-0, and 13-39-0), and later diammonium phosphate (21-53-0) actually began on a commercial scale in the late 40's. Prior to that time, very small quantities had been produced in the United States, and some small quantities had been imported, but the ammonium phosphates as such had not been popular. As late as 1946, only about 50,000 tons of these ma-

terials were being used as straight materials in American agriculture, and these almost entirely on the West Coast. By 1957 almost 400,000 tons of these materials were used as straight materials for direct application, and farmers throughout the entire Nation, except in the traditional old fertilizer use areas of the Atlantic Coast and portions of the Southeast, were becoming familiar with them. The advantages which these materials offer—high analysis, high water solubility, and chemical combinations of nutrients—promise a larger trend to their use. Some of these materials such as diammonium phosphate are completely water soluble; and offer promise of being ideal for use in the changing trend toward liquid mixed fertilizers to supplement the great growth of the low cost nitrogen solutions and anhydrous ammonia within the coming years.

Another change which apparently is coming about is the trend toward the use of liquid phosphoric acid as a straight fertilizer material (on the West Coast primarily), or in the form of liquid mixed fertilizer. Prior to recent technological advances in the manufacturing process, both by the wet process and in the electric furnace method, the cost of this liquid phosphoric acid was prohibitive for use as a fertilizer agent. Yet with the recent advances and in particular as a result of the increased supply of the material it offers great promise to supplement the very low cost nitrogen solutions. Until 1949 it had been used as a straight fertilizer material only in Arizona and California, and less than 6,000 tons had been used in any one year. By 1957 its use had tripled to over 18,000 tons and, with increased supplies rapidly becoming available at reduced prices, it may continue to have a rapid increase in the future.

Another factor which promises to result in a greater use of liquid phosphoric acid is the development by TVA of the superphosphoric acid, equivalent to 105 percent phosphoric acid in terms of P_2O_5 . If favorable freight rates are established on this type of material, another step forward will have been taken in aiding farmers to obtain better fertilizers more economically. This material, in addition to being highly concentrated, offers some promise of helping the liquid mixers in their technical problems of mixing liquids which do not "salt out," "gel," or form precipitates which clog spreading equipment.

Many changes have been wrought

in the phosphate industry since the 1930's. Prior to the mid-thirties, it had grown to maturity as an industry of normal superphosphate producers. Since the late thirties the industry has changed rapidly. New types of phosphatic fertilizers are being produced in new plants and the industry has expanded. At the same time farmers have profited from the availability of more economical forms of phosphatic fertilizers.

Potash Industry

The potash industry as it exists today, has existed only since the beginning of World War II. Progress, however, has been quite different as compared to the other two primary components of the fertilizer industry with respect, to the entrance of new firms and technological improvements in the development of new products. There has been much progress, however, in mining efficiencies and refining methods.

The increase in size of the industry has been primarily in the size and scope of the operations of various companies in the industry. Few new companies have entered the field. There were seven producing plants in 1939, four of these being major plants. By 1953 there were ten plants producing almost two million tons of K_2O compared with slightly over 300,000 tons in 1939. Prior to 1939, practically all potash used in America was either imported or byproduct material. In World War I and immediately thereafter an abortive effort had been made to begin the American potash industry; but, during the early twenties active efforts to start the industry were discontinued. However, research continued and exploration for deposits which could be economically mined was expanded. Deposits were located in California, New Mexico, Utah, and Saskatoon, Canada. New mining and refining methods now make it profitable to mine the potash rather than import. It is now evident that with the known deposits, the United States will not soon again be dependent upon imports.

The known annual capacity of these mines is now well over two million tons and can rapidly be expanded if the need arises. At the same time that capacity has been rapidly expanded, the price of the material has held relatively constant until recently. During the past year wholesale prices of muriate of potash have declined to a point where the cost of potash per unit of plant

nutrient is at one of the lowest levels of all times and is much lower than nitrogen or phosphate.

The potash industry has also grown rapidly—perhaps more rapidly than either the nitrogen or phosphate industries; but the nature of the growth has been quite different. It was a growth based on the leasing of government lands by a few large companies having the capital necessary to invest in such large mining enterprises.

Mixing Industry

To a large extent, fertilizer products used by farmers have been mixtures of nitrogen, phosphorus, and potassium in various ratios. In some cases only two of the so-called primary nutrients constitute a mixture. The content of nutrients including chemically combined carriers plus fillers and conditioners to bring the materials "up to weight" constitute mixed fertilizers. These mixtures are usually prepared from so-called primary products of the industry—usually carriers of only one of the primary nutrients.

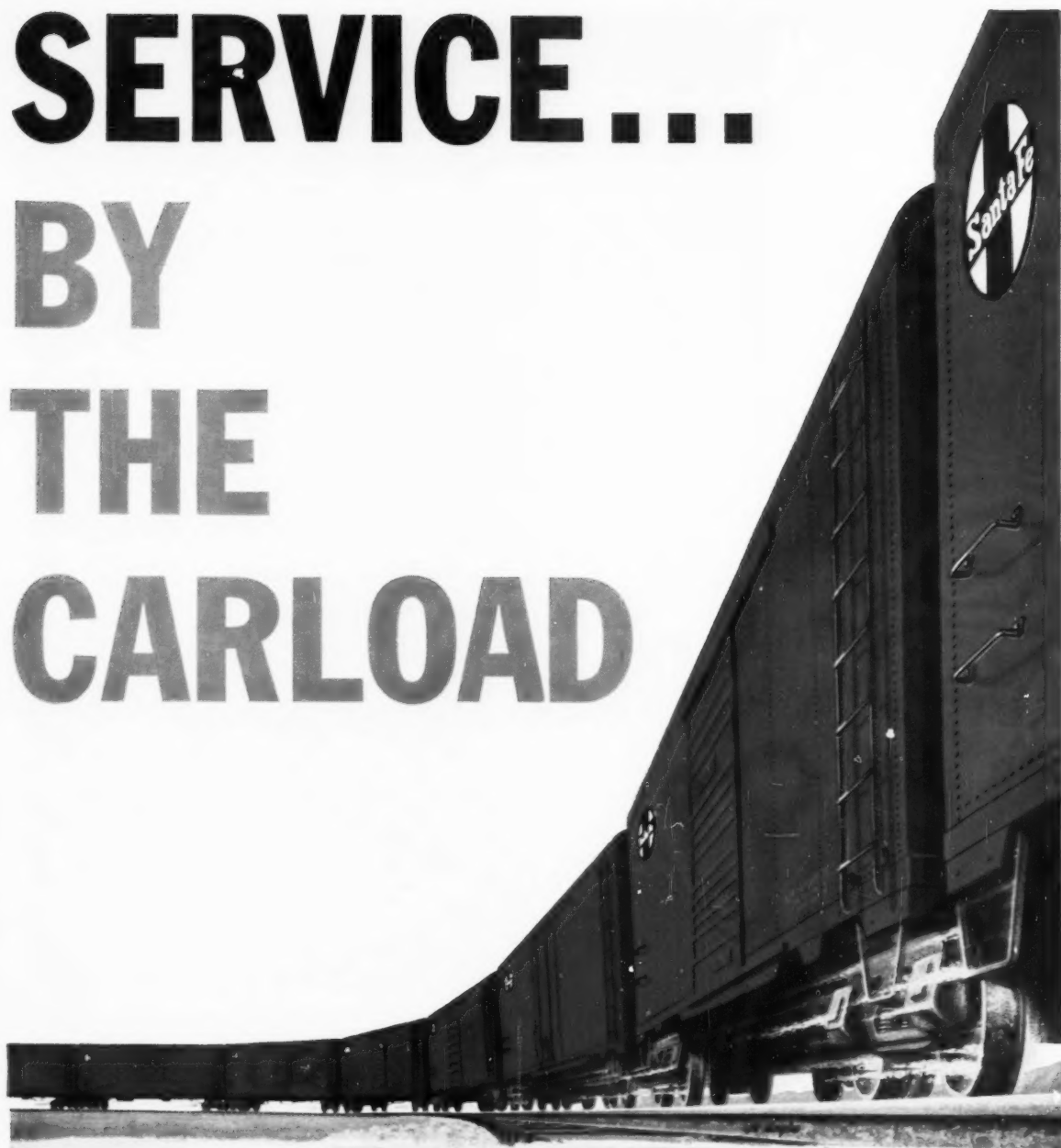
Prior to the use of soil tests, and still to a marked degree, specific grades or ratios tend to be used by farmers in an area for specific crops or pastures. Hence, a mixer is able to prepare in large quantities the various grades of mixed fertilizers that generally will be demanded in his market area.

In the past, and to a considerable degree today, primary producers of the phosphatic fertilizer materials have widely located mixing plant operations. This type of vertical integration has placed these mixers in a powerful competitive position relative to independent mixers to whom they sell primary materials.

A technological innovation of the early 1950's by TVA has improved the relative competitive position of independent mixers. This was the development of the TVA continuous ammoniator. Its use allows the mixer to produce mixed fertilizers with a higher proportion of low cost liquid nitrogen than formerly, thus effectively lowering the cost of mixed fertilizers.

The TVA ammoniator has contributed further to the mixing industry and to the economy of producing mixed fertilizer, in that it permits continuous rather than batch production. It also provides the means for widespread development of improved granulation of materials and mixtures which has proven advantageous for the drillability of fertilizer.

SERVICE... BY THE CARLOAD



Yes, our aim is to provide every customer with the best in service. Whether your order calls for a regular or "rush" shipment . . . you can count on prompt attention to your requirements as soon as the order is received.

The U.S. Potash Company's more than 25 years of experience and know-how in the production, handling and shipping of potash assure every shipment of expert service. There are three outstanding grades of potash available for the plant food industry—Higran and Higrade muriate, also Granular muriate—all three grades are non-caking and free-flowing throughout.

We look forward to the opportunity to serve you and our Technical Service Department welcomes your inquiries.

UNITED STATES POTASH COMPANY
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NOTICE ANYTHING DIFFERENT ABOUT THESE MULTIWALLS

?



Bemis SINGLE GUSSET Multiwalls are being used by the Davison Chemical Company, Division of W. R. Grace & Company, Baltimore, Maryland. The single gusset bags have good stacking qualities. They palletize well, and the filled pallets are stacked three high. In addition, these new Bemis multiwalls give improved performance on the packer.

Yes, they are different.

For one thing, they are Bemis SINGLE GUSSET Sewn Valve Multiwalls . . . another Bemis *first*. (They stack so uniformly, you have to look closely to notice the single gusset construction.)

But the BIG differences are the ones you will see in the packing performance where you get uniform filling, steadier production and greater economy. Bemis SINGLE GUSSET Multiwalls provide these important

time- and labor-saving benefits:

1. The flat tube side, opposite the valve, provides more room for the product flow during filling.
2. The additional space in the corner helps prevent blowout.
3. Fertilizer does not back up and clog the filler spout.

And still another important point—the additional usable space created by the flat tube corner often permits the use of a shorter bag, *which would save you money.*



General Offices—408 Pine Street, St. Louis 2—Sales Offices in Principal Cities

Primary producers of potash and synthetic nitrogen have effected integration into the mixing industry to a much smaller degree than have the phosphate producers. However, there is a recent trend toward integration between nitrogen producers and fertilizer mixers. There are also some indications of barter arrangements between primary producers of different plant nutrients so that a primary producer can obtain a supply of the primary plant nutrient he does not produce.

Fertilizer mixing plants tend to be located near the markets they serve. Mixing usually involves a weight gaining process employing some low cost ingredient often available locally. Mixing plants producing dry mixes in the period prior to World War II usually marketed 70 percent of their products within a radius of 50 miles of the plant.⁷ It appears that the increased efficiency resulting from large scale operation and the production of higher analysis mixes now permit a somewhat larger area of distribution. Recent innovations in the use of multiple hopper spreading equipment and bulk-blending techniques which eliminate the necessity of the added weight of fillers and problems inherent in mixing may, however, reduce the trend to larger mixing plants by the mixing industry.

Fertilizer Use Changes

Many of the agricultural areas of the United States have only recently been awakened to opportunities which are available to farmers to increase income through the use of fertilizer. This increase in the demand for fertilizer has resulted from a large number of conditions and improvements in other factors of production as well as fertilizer. By considering the factors governing demand separately we can see how each has contributed to the continuing expansion of fertilizer use.

During World War II farmers produced unprecedented amounts of food and fiber to support the war effort. As a result, there was a large drawdown in the fertility reservoir on the farms of the Nation. Improved plant varieties, herbicides, and pesticides were developed after the war. These conditions set the stage for a very large increase in demand for fertilizer not only in old fertilizer use areas, but also in many agricultural areas which had never previously used fertilizer.

The improvements in other chemicals used on farms are continuing as are plant variety improvements.

The combined use of these factors of production with fertilizer result in complementary effects of rather large magnitude which would not be possible if any of them were used without the others.

The government's acreage control program without restrictive use on other factors of production also contributes to increased demand for fertilizer. In addition, certain ACP payments have been made to farmers on a direct reimbursement basis for fertilizer purchased for pastures and other close growing crops.

More farmers throughout the nation are fertilizing more crops, using higher rates of application. The trend has been toward more use of fertilizers on hay, pasture and cover crops. Yet there remains a tremendous acreage of these crops which is not fertilized and even most of those acres that are fertilized receive very small amounts per acre in comparison to college recommendations.

One of the more important factors contributing to efficient and expanded use of fertilizers over the past few years, especially on soil conserving crops, has been the bringing together of fertilizer manufacturers, distributors and dealers, with the public agricultural agencies, in developing educational programs involving manufacture, distribution, and use of fertilizers. This has tended to help the group to identify problems facing the fertilizer industry and farmers, and more specifically to develop unified action programs. The TVA fertilizer distributor-demonstration and farm test-demonstration program, and TVA fertilizer have made important contributions in this respect.

Contrary to what one might expect, the price of fertilizer has increased less relatively than most of the other inputs farmers use. The Department of Agriculture has estimated that while the cost of all fertilizers, based on 1935-39 prices increased 48 percent, feed prices increased 100 percent, farm machinery, 116 percent, and wage rates, 346 percent.⁸ It appears, therefore, that one of the principal reasons for the increased demand for fertilizer has been its relative improvement, from the farmer's viewpoint, as a cost of production item.

In the past, much of the mixing, wholesaling and retailing has been built on a high volume, low margin basis. The increased concentration of use in many of the principal agricultural areas and the improved storing condition of fertilizer materials may tend to intensify this situation.

The internal and external economies inherent in operation of large mixing plants in some instances and the economies of distribution in intensive fertilizer use areas may result in fewer handlers, each doing more business than at present. This should assist in further lowering costs of fertilizers to farmers. Improved methods of handling, such as in bulk or in the convenient liquid and gaseous forms, will also contribute to this general improvement in the economies of distribution.

One innovation which may have revolutionary consequences for the industry is the soil test. As a result of the use of this objective determination of the soil's need for plant nutrients, many more ratios of plant nutrients than are now available may be needed in varying quantities in a mixing plant's marketing area. Several marketing schemes are being employed in various locations at the present time to meet this new type demand. Fundamentally, each method depends on the use of straight materials mixed in the local area to the ratio prescribed by the soil test. Three methods being employed are bulk blending, including prescription mixing, multiple hopper fertilizer spreader use, and liquid mixing. Each of these new marketing techniques reduces the cost of mixing, and makes it less necessary to use additives which contribute little to fertility but add weight which leads to additional freight, handling, and storage costs. A central feature of these innovations in fertilizer marketing is custom spreading. Because the spreading machines designed to handle three straight materials simultaneously are more costly than conventional machines, it is usually necessary to fertilize more acres annually than are available on single farms in order to secure efficient cost of operation.⁹ In addition, studies in some areas of the Midwest have shown that farmers do not like the work of handling and spreading fertilizer. In Illinois where bulk-blending is now being done in 92 small plants, 27 percent of the total straight materials was handled by these mixers during 1956.¹⁰ Rapid growth in bulk blending has developed in Illinois and in other areas of the Midwest. If this segment of the industry continues to grow, a very great decentralization of mixing operations could occur. With such a development, market structure might be altered considerably with perhaps an improved ability on the part of industry to meet the spe-

cific plant nutrient needs of each field on each farm. If this activity is to expand significantly, it may have to overcome some important problems such as securing and maintaining uniform mixtures, and modifying the present seasonal demand for the spreading service.

Research Programs

Another innovation which indirectly affects changes in market structure is the improved knowledge of economical fertilizer use through research. During the last decade marked improvements in agronomic research relative to fertilizer use and economic interpretation of the agronomic data have been made.¹¹ Now, instead of investigating the effects of single plant nutrient increases or decreases on crop production, researchers design their experiments so that various combinations of applied plant nutrients are tested simultaneously. The relationships among plant nutrients may thereby be determined, and optimum economic combinations and economic application rates may be ascertained. Findings from these studies have armed agricultural workers, fertilizer company fieldmen, and others with the basis for making more sound fertilizer recom-

mendations conditioned by relevant economic factors. These developments and others are focusing farmers' attention on the price of plant nutrients they buy to a greater extent than formerly.


Linear programming is another research technique which is demonstrating to agricultural workers the role that fertilizer can play in farm organizational structure.¹² Increased use of this technique by researchers and agricultural workers should eventually contribute to a more stable and increasing demand for fertilizer in most agricultural areas.

We have attempted to indicate and explain briefly some of the major changes that have occurred in the fertilizer industry and in the demand for fertilizers during the last three decades. It is our hope that more research workers will undertake studies of specific problems related to the fertilizer marketing structure with the objectives of (1) securing a better understanding of this industry, and (2) determining efficiencies in the marketing system that may be effected so that farmers may be able to secure plant nutrients at lower costs per unit, yet maintain a strong and expanding fertilizer industry.

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- ²Lamer, Mirko, *The World Fertilizer Economy*, Stanford University Press, Stanford, California, 1957, Chap. 3, pages 31-58.
- ³Fertilizers are designated by grade as to their content of nitrogen phosphorus pentoxide (P_2O_5), and/or potassium oxide (K_2O). Thus, a 5-20-20 mixed fertilizer contains 5 percent nitrogen, 20 percent P_2O_5 , or its equivalent in terms of phosphorus, and 20 percent K_2O or its equivalent in terms of potassium. Carriers of single nutrients are designated as straight materials such as 33.5-0-0 for ammonium nitrate.
- ⁴*Fertilizers Applied in Liquid Forms*, ARS Special Report 22-35, USDA, November, 1956.
- ⁵Mehring, A. L., et al., *Statistics on Fertilizer and Liming Materials in the U. S.*, Statistical Bulletin No. 191, USDA, April 1957, Table 1, 4 and 5.
- ⁶Anhydrous ammonia is a gas at ordinary pressures and is the only gaseous fertilizer used as such in mixed fertilizer operations and for direct application to the soil. It is stored and transported under pressures sufficient to condense it to a liquid state. It contains 82 percent nitrogen.
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- ¹¹E. L. Baum, Earl O. Heady, and John Blackmore, *Methodological Procedures in the Economic Analysis of Fertilizer Use Data*, Iowa State College Press, 1955.
- ¹²E. L. Baum, Earl O. Heady, John T. Pesek, and Clifford Hildreth, *Economic and Technical Analysis of Fertilizer Innovations and Resource Use*, Iowa State College Press, 1956, Part IV, pages 243-316.

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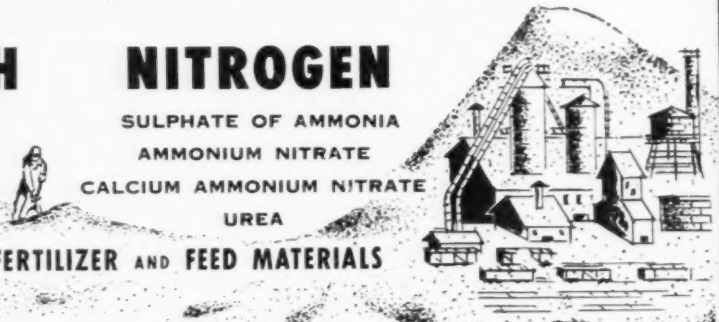
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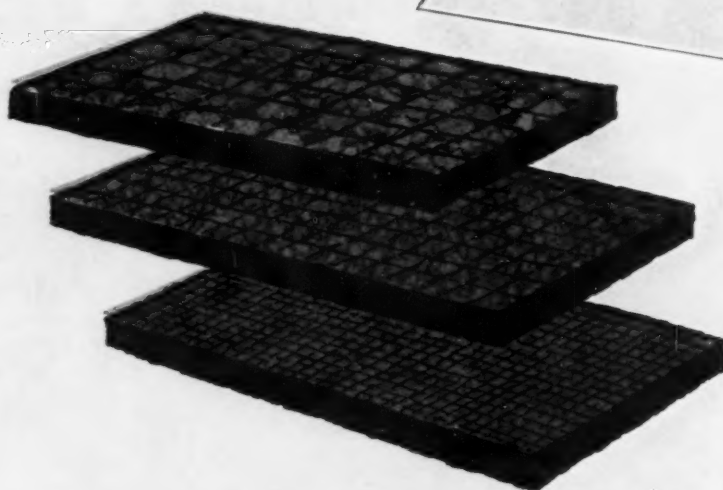
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Allman Heads New Canadian Association

Dr. R. T. Allman was elected president of the newly-formed Canadian Fertilizer Association at the first annual meeting held at the Manior Richelieu, Murray Bay, Quebec, August 20-23. He is president and owner of Bradford Fertilizer and Chemical Company, Bradford, Ontario.

A. Lambert, general manager of International Fertilizers Ltd., Quebec, was named first vice president; E. A. Taylor, assistant general purchasing agent for Steel Company of Canada, Hamilton, became second vice president; and Don M. Moffatt, manager of the Agricultural Chemicals Division for United Cooperatives of Ontario, Toronto, was elected secretary-treasurer of the new association.

Nearly 200 were present at the initial meeting of the new association, which replaces and expands the former Plant Food Producers of Eastern Canada. Coolish weather on the opening day of the meeting moderated into pleasantly warm days and cool evenings.

In his opening remarks to the convention, Dr. Allman stressed the need for such a national organization as the new Canadian Fertilizer Association.

"Problems such as tariffs, transportation rates and legislative regulations are active problems facing our industry today," he said. "And we will need the support of this Association in dealing with them."

In his address to the Convention on the recent revisions to the Fertilizer Act, C. R. Phillips, head of the Fertilizer and Pesticide Unit of the Canadian Department of Agriculture, emphasized that, wherever pesticides are custom-mixed by fertilizer manufacturers, the use recommendations must be acceptable to the Department of Agriculture.

Another speaker, Dr. George R. Smith, director of Chemistry of the Soils and Fertilizer Services of the Nova Scotia Department of Agriculture and the Nova Scotia Agriculture College pointed out the demands that will be made on agriculture in the future.

"15% of the farmers are producing 85% of the produce sold off the land in the U.S.A. and Canada," he said.

"Within the next 25 years in the U.S.A. and Canada, we must produce crops to supply 40 million more people. And this must be done on a

smaller land area than at present," continued Dr. Smith.

"This job will be done by our good farm managers who will overcome the present limiting factors of low soil fertility and high soil acidity. And these farmers will use substantially increased quantities of fertilizers and lime," he concluded.

Dr. Russell Coleman, executive vice-president of National Plant Food Institute, who was also in attendance at this first meeting, listed what he felt were three barriers limiting the proper use of fertilizers today. These were a lack of knowledge about fertilizers . . . particularly their economic values; fear of using too much fertilizer and damaging crops; and lack of adequate credit for financing.

Dr. E. G. Pleva, head of the Department of Geography, University of Western Ontario, emphasized the need for better use of effective planning legislation in dealing with the expansion problems that will accompany St. Lawrence Seaway development.

"Much of Canada's best agricultural land in Southern Ontario is in the shadow of urban expansion," he said.

"The economics of the Seaway

will accelerate urban development," continued Dr. Pleva. "And, although increased urban markets will aid Ontario agriculture, much of the finest land in Canada will be, and is being, changed to suburban subdivisions, airports, super highways and industrial sites."

Dr. Pleva said that the Province of Ontario, together with the Great Lakes states of the U.S., must develop increasingly effective means to steer non-agricultural-land uses to the lower grades of land.

"Once good land is withdrawn from agricultural use, it becomes a sterile land use . . . only for standing room," he added.

"Ontario already has effective planning legislation under the Conservation Authorities Act, the Planning Act and the Water Resources Commission Act, so the problem is not to press for more legislation but to use better what we already have," he stated.

Predicting that Canada's population will nearly double in the next 35 years, Dr. Pleva cited the demands on the nation's agricultural productivity, reminding that the U.S.—faced with similar problems—may lack capacity to export food stuffs to Canada as the turn of the century nears.

Upper left: New officers—First Vice President A. Lambert, International Fertilizers Ltd., Quebec; President Dr. R. T. Allman, Bradford Fertilizer & Chemical Co., Bradford, Ont.; and Secretary-Treasurer Don M. Moffatt, United Cooperatives of Ontario, W. Toronto.
Upper right: In the men's golf tournament were: D. N. Houseman, Davison Chemical Co. division W. R. Grace & Co., Baltimore; G. B. Ough, Canadian Industries Ltd., Chatham, Ont.; Bob Linderman of Chicago and Bill Chadwick of New York, both with International Minerals & Chemical Corp.
Lower left: Banquet head table: W. Maxwell Ford, guest speaker; Convention Chairman Alex Mooney, Canada Packers Ltd., Toronto; Mrs. W. M. Ford; Don M. Moffatt, United Cooperatives of Ontario, W. Toronto; Mrs. Russell Coleman; Dr. R. T. Allman, Bradford Fertilizer & Chemical Co., Bradford, Ont.; and Mrs. D. M. Moffatt.
Lower right: In the "White String Open" ladies' golf tournament, Bill Chadwick measures a putt as Mrs. Chadwick and Mrs. J. W. Thomson look on.



Pacific N.W. Meet Offers New Feature on Solutions

The Pacific Northwest Plant Food Association has listed a mysterious "something new" . . . a "solutions program" being organized by Karl Baur. There will be golf and ladies events, and a formal dance at which you can wear bikini bathing suits if you please, they say. The dates, October 22-24, at the Gearhart Hotel, Gearhart, Oregon.

Here are the speakers lined up to date: Robert Stewart, Oregon director of Agriculture; Herbert West, executive secretary, Inland Empire Waterways Assn.; G. W. Perry, assistant vice president, First National Bank of Oregon; W. R. Allstetter, National Plant Food Institute; and

Palmer Torvend, extension soils specialist, Washington County, Oregon.

Karl Baur's Solutions Panel will include Shell's Haven Lewitt talking on anhydrous ammonia and Collier's Bud Lockhart discussing aqua ammonia.

There will also be a forum to outline and answer questions on characteristics of fertilizer solutions. Participants and topics, as we have them at present, are: Simplot's J. R. Brissenden on phosphoric acid; Bob Inkpen on 8-24-0; A. Allison on solution 32; Fred Miller on ammonium bisulfite; U.S. Potash's Ed Kapusta on potash for solutions; Dick Kenyon on ammonium nitrate; and TVA's A. V. Slack on new materials developments.

Show Biz Stars Feature CFA Meet

When, in November, the California Fertilizer Association convenes on the 9th to the 11th at the Ambassador Hotel, Los Angeles, stars of show business will be headlined along with leading industry speakers. Dr. Russell Coleman and Roy Kennedy are so far scheduled on the industry side. Ronald Reagan, Carol Channing, the Freddy Martin orchestra, plus a whole evening at the famed Cocoanut Grove, reserved exclusively for the convention, are on the entertainment ledger.

There will, of course, be lots more, and we'll bring it to you as announced. Meanwhile CFA asks that you make your reservations now. Refer any questions to CFA at 479 Huntington Dr., San Marino 9, Calif.

Southeastern Conference Plans Complete

Community-wide promotion of soil testing which led to improved fertilizer practices this year in two North Carolina counties will get considerable attention at the Third Annual Southeastern Fertilizer Conference in Atlanta, Ga., this month.

The conference, sponsored by the National Plant Food Institute, is slated for the Atlanta Biltmore Hotel, October 29-30. Invitations have been extended to representatives of all fertilizer manufacturers in the Southeast to attend the session.

A banker, a county agent, a fertilizer dealer, and a Chamber of Com-

merce representative will outline in a panel discussion the role each has played in "Acquainting North Carolina Farmers With Their Fertilizer Needs." The soil testing promotion project was carried out in Hoke and Scotland Counties, where North Carolina officials feel the program contributed greatly to maintaining fertilizer tonnages despite the reductions in cotton acreage. Dr. J. W. Fitts, North Carolina State College, will moderate the panel discussion.

An informal mixer will open the conference on the evening of Oct.

29. The program will get underway Oct. 30 with Mr. J. H. Epting, Chairman, Southeastern Industry Advisory Committee, presiding.

Requests for reservations for the meeting should be made directly with the Atlanta Biltmore Hotel.

Members of the Institute's Southeastern Regional Advisory Committee will meet prior to the conference, while the Institute's Southeastern Regional Research and Education Committee, the Southern Extension Agronomists and the Southern Soil Research Committee intend to convene following the conference.

PROGRAM

October 29, 1958

6:30-7:30 P.M. Cocktail Hour

October 30, 1958

Presiding—Mr. J. H. Epting, Epting Distributing Co., Leesville, S. C.

9:30 A.M. The National Plant Food Institute Program in the Southeast—Dr. Russell Coleman, executive vice president, N.P.F.I.

9:40 A.M. Soil Testing—A Guide to Better Fertilization Practices—Dr. R. L. Beacher, southwestern regional director, N.P.F.I.

9:50 A.M. Acquainting North Carolina Farmers With Their Fertilizer Needs—A panel discussion of the Hoke and Scotland counties, North Carolina, Soil Testing Program. Moderator—Dr. J. W. Fitts, head, Dept. of Soils, North Carolina State College. County Agent's Role—Mr. W. C. Williford, county agent, Raeford, North Carolina. Chamber of Commerce Role—Mr. T. B. Upchurch, Raeford, North Carolina. Banker's Role—Mr. Clyde L. Stutts, executive vice president, Commercial State Bank, Laurel Hill, N. C. Fertilizer Dealer's Role—Mr. W. M. Campbell, Dixie Guano Co., Laurinburg, N. C.

10:40 A.M. Merchandising—A Key to Successful Business—Mr. F. E. Hartzler, merchandising specialist, Kansas State Teachers College, Emporia, Kansas.

11:30 A.M.—Adjourn.

COMMITTEE MEETINGS

October 29, 1958

Southeastern Regional Advisory Committee, N.P.F.I., 2:30 P.M., Mr. J. H. Epting, chairman.

October 30, 1958

Southern Soil Research Committee, 1:30 P.M., Dr. D. A. Hinkle, chairman.

Southern Extension Agronomists, 1:30 P.M., Mr. G. H. Enfield, chairman.

Southeastern Regional Research and Education Committee, N.P.F.I., 1:30 P.M.

October 31, 1958

Southern Soil Research Committee, 9:00 A.M., Dr. D. A. Hinkle, chairman.

Southern Extension Agronomists, 9:00 A.M., Mr. G. H. Enfield, chairman.

PROGRAM COMMITTEE

Mr. J. P. Champion, Jr., Albany Warehouse Co., Albany, Ga.; Mr. G. L. Dozier, Central Georgia Fertilizer Co., Macon, Ga.; Dr. J. W. Fitts, Head, Department of Soils, North Carolina State College, Raleigh, N. C.; Dr. C. D. Hoover, Head, Department of Agronomy, Mississippi State College, State College, Miss.; H. V. Miller, Armour Fertilizer Works, Atlanta, Ga.; Dr. H. T. Rogers, Head, Department of Agronomy and Soils, Alabama Polytechnic Institute, Auburn, Ala.; Dr. S. L. Tisdale, Southeastern Regional Director, National Plant Food Institute.

Northeast Committee Holds Initial Meeting

Members of the National Plant Food Institute Northeastern Industry Advisory Committee held their initial meeting at the Bald Peak Colony Club, Melvin Village, N. H., September 23.

Presiding at the meeting was Victor A. Ericson, Consolidated Rendering Co., who served as acting chairman. The opening session preceded the New England Fertilizer Conference, held on September 24.

Richard E. Bennett, president of the Institute, outlined functions of the Regional Advisory Committees while W. R. Allstetter, vice president, covered legal aspects of committee operations.

Dr. W. H. Garman, NPFI Northeastern regional director, reported on the recent meeting of the Northeastern Research and Education Committee and reviewed Institute projects in the Northeast.

Other topics discussed at the meeting included: a review of the Institute's bankers program; the need for new research, including forest fertilization; plans for the 1959 New England Conference; committee tenure; and the "Fertilizer Salesman's Manual."

MEETINGS

Florida—The University of Florida will be host to the 1959 meeting of the American Association of Agricultural College Editors, according to J. Francis Cooper, head of the AES editorial department.

The group voted to come to Florida at its recent session at the University of Wisconsin. Florida was host to the editors in 1937.

Mr. Cooper, a past president of the organization, says the meetings are attended by about 300 people representing most of the states, the U. S. Department of Agriculture, and commercial agencies.

Jack Shoemaker of the State Department of Agriculture, an associate member of AAACE, will assist in entertaining the visitors.

Louisiana—A course in advanced crop and soil management was offered by Louisiana State University at the Red River Experiment Station near Shreveport September 15, according to Dr. J. Norman Efferson, dean of the Louisiana State University College of Agriculture.

The course covered soil composition and deficiencies, fertilizers and lime, soil testing and interpretation and soil and crop management. Instructor was Dr. Walter J. Peevy, LSU agronomist.



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N. W. Forestry Conference

Studies Fertilizer Use

"Proper use of our timber resources requires utilization of all the good management practices presently known, in addition to developing many new methods in the future," according to George Schroeder, Crown Zellerbach Co.

"Naturally," Mr. Schroeder continued, "proper use of fertilizer and farm chemicals will play an important role in the future, if the economics prove feasible."

Mr. Schroeder participated in a special school on forestry management at Pack Forest, Wash., Sept. 3-5. The meeting, sponsored by the University of Washington and the National Plant Food Institute, attracted some 50 representatives of the forestry and fertilizer industries.

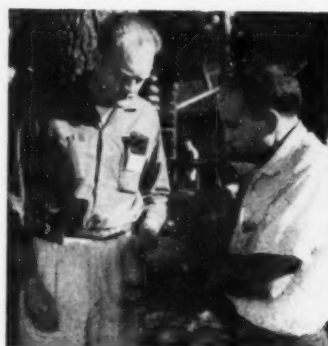
F. Todd Tremblay, Pacific Northwest regional director for the Institute, opened the school and pointed out that the Pack Forest session would be the first in a series of annual meetings aimed at acquainting the fertilizer industry with the modern techniques involved in growing trees. Dr. Stanley Gessel, associate professor of forestry at the University, served as chairman of the school.

Two fields of forestry research which need to be thoroughly investigated, Ted Yocum, Simpson Timber Co. forester, said, are (1) proper use of fertilizer, and (2) forest tree genetics.

Mal Alexander, Weyerhaeuser Timber Co. forester, pointed out that his company is attempting to reforest about 11,000 acres annually by using five different methods: (1) aerial seeding of current logging operations, (2) scarification of acreage by dozers and aerial seeding, (3) aerial use of weed sprays to kill broadleaf trees and release canopy to aid growth of Douglas fir trees, (4) planting transplant stock immediately following aerial spraying, and (5) transplanting without spraying.

In discussing the fundamental factors of tree growth, Dave Scott, University of Washington, pointed out that most forest lands generally are poor from a soils standpoint, and trees differ from other crops because the period of growth extends over a long period of years.

Cooperation between industry, State and Federal agencies will be



Dr. Stanley P. Gessel, associate professor of forestry, University of Washington (right) shows R. L. Luckhardt, Collier Carbon and Chemical Co., the place to take a needle sample for plant analysis at the special school on forestry management.

necessary to provide the answers for present and future problems, Bill Cummings, Weyerhaeuser Timber Co. research forester, noted.

"About two-thirds of the lumber produced in the United States comes from the Northwest," Cummings continued, "and, research efforts in this area should be enlarged considerably, if we are to meet our future needs."

"Forest fertilization experiments conducted by our company," Ray Austin, Crown Zellerbach Co. forester, said, "show fertilizer increased leader growth on seedlings up to 60 per cent, in addition to giving a much better survival on the stand."

Recharging Wells to Conserve Water Supply

The problem of vanishing water, so vital to human welfare, is being approached, even if it is only in a small way, by returning water to wells from which it is pumped, instead of wasting it down the drain. This can be done in many cases, such as the use of water in cooling systems.

The US Geological Survey has been making a study of artificial rechargins methods, and in several states methods of various types are in use, ranging from direct return to subterranean reservoirs to the basin method, which is simply pouring it back upon the ground to find its way to the reservoirs.

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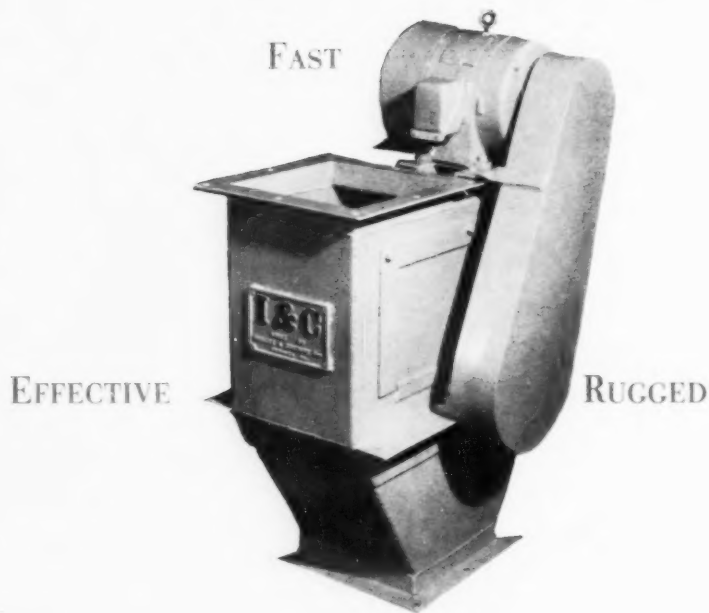
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AUSTRIA

Nitrogen Plant Modernizing, Super and Acid Output Rises

The nationalized Austrian Nitrogen Works is the only producer of chemical fertilizers. The private firm Chemische Werke Hirm A. G., which planned to make superphosphate, ran into financial difficulties and after trial production of 500 tons of superphosphate discontinued operations in 1957.

Annual output of nitrogenous fertilizer totaled 724,800 tons in 1957, compared with 606,000 tons in 1956. Production of other fertilizers and chemicals increased from 111,300 tons in 1956 to 159,100 tons in 1957. Because of repairs to the nitrogen plant, output in 1958 is predicted to be 5 to 8 percent lower than in 1957.

With increased demand for superphosphate and higher production of sulfuric acid, capacity was stepped up from 65,000 tons to 80,000 tons. A further increase is possible if requirements rise. Imports of phosphate rock totaled 20,840 tons in 1956; the principal sources were West Germany (9,090 tons), Algeria (5,740), and the United States (3,590). Imports in 1957 were almost double, 40,000 tons, and about three-fourths came from Morocco and the remainder from West Germany.

Production of complete fertilizers was expanded in 1957 when a new mixing plant began operations. Capacity is estimated at 30,000 tons annually. Capacity for peat moss material is about 10,000 tons. Construction of a urea plant, with an estimated capacity of 10,000 to 14,000 tons, was delayed, but it reportedly began operations in January 1958.

Almost all of the superphosphate, complete, and special fertilizers were sold on the domestic market, but approximately 75 percent of the nitrogenous material was exported.

Early in 1958, public administration of the Austrian Nitrogen Works was replaced by company officials. Production has since increased there.

In the first half of 1958, the facility produced 369,000 tons of fertilizer. The output of superphosphates totaled 53,000 tons against 44,000 tons in the similar period of 1957. A special department, now increased to three plants, produced 40,000 tons of sulphuric acid, a result almost doubling the output of

24,000 tons reached in the first six months of 1957.

BELGIUM

Government Cuts Price of Nitrogen Materials

A substantial cut in Belgian prices for nitrogenous fertilizers was announced August 26 by the Ministry of Economic Affairs at Brussels. Prices are fixed officially for each agricultural year beginning July 1.

These prices have made it possible in certain cases for intermediaries to buy from the Dutch works at Ljmuiden and resell in Belgium at a substantial profit. The main reason for the price difference is the high cost of coal in Belgium.

The present arrangement is in the nature of a bargain: prices are to be reduced on sulphate and on nitrate, and the industry is to be protected by a "compensatory duty" of 4 percent on imports. Duties of this kind, ostensibly intended to offset advantages enjoyed by the Dutch producers, are permissible within the Benelux framework subject to the Dutch Government's agreement. It is hoped that with the extension of the new nitrogen plant near Ostend of the Union Chimique Belge it will be possible for Belgium's industry to cover Belgian farmers' needs at reduced prices without undue loss of profit. The plant, however, is not yet working smoothly and the new arrangement is described as requiring producers to "anticipate the advantages to be drawn from recent investments."

INDIA

Distribution Is Improved; Supplies Still Lag Demand

Government and industry propaganda in recent years has done much to overcome the prejudice, fear and apathy that have in the past blocked expansion of chemical fertilizer usage.

Regional meetings sponsored by the Ministry of Food and Agriculture during the spring season are helping to smooth out irregularities in distribution of superphosphate supplies, and across-the-table discussion between industry men and representatives of the various States has resulted in an increased demand for phosphatic materials.

Anticipated supplies for the 1958-59 season will be about 10% above

those available during 1957-58, according to the Ministry. They predict some 186,410 long tons of N, 38,000 of P_2O_5 and 24,000 of K_2O . Domestic production will supply about 53% of the nitrogen and all of the phosphates.

If sufficient supplies were available, it is estimated that consumption would immediately exceed estimates by 25 to 30%.

At best, the supplies are pitifully inadequate for an agricultural economy the size of India's, and no substantial improvement is expected in the near future. Restricted imports due to an acute shortage of foreign exchange will likely continue to bar any major increase in supplies.

The Fertilizer Association of India is urging the government to put all possible foreign exchange into fertilizer imports, stating that: "By increasing our agricultural production through fertilizer use we can save foreign exchange on imported food grains, besides earning (even more) foreign exchange through export of agricultural commodities (sugar, cotton textiles, jute, tea, oilseeds and tobacco). On the whole expenditure on import of fertilizers will result in larger earnings of foreign exchange."

Calculating the maximum supply of fertilizers that may become available this year (and assuming that all foreign aid materializes) the Association predicts that if application rates are held to 30 pounds of plant food per acre, no more than 5% of the cultivated area and 24% of the irrigated can be treated.

ISRAEL

Fertilizer Combine Reports Sales, Profits up 50%

Fertilizers and Chemicals, Israel's chemical combine and the nation's largest manufacturing enterprise, reports that sales during the 1957-58 season were 50% above the preceding year. The increased sales were accompanied by a rise in net profits from 10.4% to 16.6%, even after allowing for depreciation at the full rate. Dividends on both common and preferred stock were hiked substantially.

The more favorable showing was attributed to higher productivity, stemming from output beyond the rated capacity of some manufacturing units.

International Scene

KOREA

Official Calls for Government-only Imports

Fertilizer must be imported mostly by the Government, not by private firms, because the supply of this commodity is too far short of demand, Vice Minister of Agriculture and Forestry Byung Yoon Kim stated last month in Seoul.

Until supply and demand of fertilizer is adjusted one way or another, importation must be effected by the Government, Kim ruled, as private importation under existing conditions would result in rising fertilizer prices, which in turn would force grain prices up still further.

Following Kim's statement, the Ministry announced on September 11 the proportions of fertilizers to be imported with \$30 million in 1959 ICA aid funds: \$21 million to be handled by the government, \$9 by private importers. Of the government's share, \$16,100,000 will buy nitrogenous fertilizers, with the remainder spent for phosphatic materials; private concerns will bring in \$6,900,000 in nitrogen goods and import phosphates for the balance of their \$9,000,000.

Economic coordinators pushed the ICA aid program through early so fertilizer import commitments could be set before world market prices began rising. They also approved Korea's \$5.8 million technical cooperation program request.

MEXICO

Special Tax Inducements For 'Super' Producers

In an effort to promote production of superphosphates, Mexico's government is offering special tax inducements. A new decree of the Ministries of Economy and Finance provides 100 percent exemption on stamp tax, 100 percent of the federal participation in mercantile income tax, and 20 percent deduction from federal income tax to producers of superphosphates. If all the raw materials are locally produced, the deduction on income tax may be as high as 30 percent. These concessions will be operative for seven years.

At the same time the Ministry of Economy's Mines and Petroleum department has been making a survey of possible phosphate production, including analysis of smelter smoke-stack output. Engineers studying

the latter have reported that hundreds of tons of sulfur, sulfuric acid and other chemicals can be salvaged, some in the vicinity of phosphate rock deposits.

A combination of the sulfur products and the phosphate rock would provide a supply of superphosphates for fertilizer that would be enough to warrant suspension of imports, government engineers claim.

PAKISTAN

East Pakistan Optimistic Over New Plant Plans

Much has been done in recent years to make up for past neglect in the economic development of East Pakistan. But perhaps the greatest factor that will contribute to its future is the project for setting up a giant fertilizer factory in the province (see June CF).

With its capacity limited to 50,000 tons a year, the Daudkhel plant was unable to meet the demand in West Pakistan, let alone East.

East Pakistan could not be entirely or economically satisfied from so long a distance. The Pakistan Industrial Development Corporation therefore decided to make the province self-sufficient with a modern plant to produce nearly 250,000 tons of chemical fertilizers. The nature of the agreement concluded with Japan's Kobe Steel Works to erect the plant shows the sense of urgency and speed with which the problem is being viewed by its sponsors. Responsibility of completing it according to schedule and of training Pakistani technicians has been taken over by the Japanese firm.

Unlike West Pakistan where vast areas of virgin soil have still to be reclaimed, the land resources of East Pakistan are severely limited. There are hardly 4 million acres of cultivatable wastes as against 20 million acres in the West.

The hope of increasing agricultural production primarily lies in intensive cultivation with fertilizers. Because of the lack of nutrition over the years, the point of diminishing returns was reached long ago, and even a good harvest does not mean that there will be enough food to feed a population of 44 millions.

Use of chemical fertilizers on a big scale will make a vast difference to its agricultural resources and help in the attainment of self-sufficiency in the foreseeable future. There, it is not the problem of providing incentives to the cultivator but equipping him with the means and methods of cultivation that have already yielded remarkable results.

SOUTH AFRICA

Steady Growth in Output Of Nitrogen, Superphosphate

South African output of superphosphate has shown steady gains in recent years, from 48,000 tons in 1956 to 60,000 tons in 1957, and is expected to reach 72,000 tons in 1958. Completion of a new plant at Sasolburg by the end of next year will add an additional 200,000 tons to the nation's capacity. In addition to superphosphate, the Sasolburg plant will turn out some 112,000 annual tons of granular compound fertilizers.

Phosphate rock production rose to 110,000 tons in 1957, about 10% above the preceding year's production. Little change from the 1957 rate is expected in 1958.

Meanwhile, the sole producer of anhydrous ammonia in the Union of South Africa announced plans to double its capacity to 145,000 tons by 1960 (see "Around the Map" in this issue) while adding facilities for manufacture of urea.

SPAIN

With Farmer Acceptance, Expansion Plans Proceed

Use of fertilizers has become general throughout Spain: farmers and farm workers are increasingly convinced that a good harvest is possible only when the soil is suitably fed. Fertilizer factories are undergoing a large scale program of expansion, particularly those producing nitrogenous fertilizers situated in Sabinanigo, Huesca, Barcaldelo, Vizcaya, La Felguera, Asturias, Monzon, Huesca and Valladolid.

The latter, Nitrates de Castilla, S. A., has just acquired new and up to date equipment for the extension of its plant, and has stated that its production of nitrogenous fertilizers, currently estimated at 70,000 tons a year, will rise to 200,000 annual tons by 1962. Other factories are expected to show a similar increase, from a present total of 370,000 tons to 690,000 tons.

SWEDEN

1957 Pyrites Exports Exceeded 100,000 Tons

Sweden's exports of pyrites during 1957 totalled 101,138 metric tons, with the bulk of the material going to European nations.

Destinations and tonnages were: Poland, 29,994 tons; Czechoslovakia 29,797 tons; East Germany 17,648 tons; United Kingdom 13,416 tons; and West Germany 10,182 tons.

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NEW YORK, N. Y.—80 Broadway
OMAHA, NEB.—3212 Dodge Street
PASADENA, CALIF.—317 North Lake Ave.

RALEIGH, N. C.—401 Oberlin Road
SALT LAKE CITY, UTAH—68 South Main
SPOKANE, WASH.—521 East Sprague
ST. LOUIS, MO.—4251 Lindell Blvd.
TAMPA, FLA.—3737 Neptune St.
TULSA, OKLA.—1708 Ulrica Square
WICHITA, KAN.—501 KFH Building



Burroughs, Jr.

Burroughs, Sr.

F. S. Royster

C. F. Burroughs has become board chairman of F. S. Royster Guano Co., Norfolk, while his son, Charles, Jr., succeeds him as president. The senior Burroughs joined the company shortly after its founding in 1885, and has been president since 1928. His son has been an officer in the company since 1945, with 21 years of unbroken service in the organization which he joined in 1933.

Richard D. Cooke, Jr., grandson of the late F. S. Royster, founder of the company, remains secretary but also joins F. S. Royster, Jr. and F. S. Moore as a vice-president. T. N. Gerreald has moved up from assistant to treasurer.

Pacific Guano

R. Q. Smith, president of Pacific Chemical and Fertilizer Co., is the new president and board chairman of Pacific Guano Co. He was also named a director of Western States Chemical Corp.

W. L. "Roy" Dixon, new president of Western States Chemical, was named vice president and general manager of Pacific Guano.

Pacific Guano, at Berkeley, has plants in California and Arizona; Western States Chemical has offices at San Francisco and a plant at Nichols, Calif.

Sunshine Plant Food

Sunshine Plant Food Co. of Clovis, New Mexico, has announced ap-



Adams

pointment of B. E. Adams as executive vice-president and general manager, with executive offices in the Exchange Bank Bldg., Dallas, Texas.

With greatly increased facilities for the production of steer and sheep manure, Sunshine has also appointed two new manufacturers representatives, according to Mr. Adams. Horticultural Marketers, Inc. of Fort Lauderdale, Florida, will service Florida, Alabama, Georgia and part of South Carolina. The Estes Co., Dallas, will represent Sunshine in Texas, Oklahoma, Louisiana, Arkansas and Memphis, Tennessee.

PEOPLE

in the
Industry

Ontario Council

Harold G. Sewell, salesmanager of the Canadian Industries Ltd., Toronto district, has been made chairman of the Plant Food Council of Ontario.

Cyanamid

Thomas L. Perkins, a director of American Cyanamid Co. since 1951, was elected board chairman. Gurdon Wattles was elected chairman of the executive committee, replacing Mr. Perkins.

W. G. Malcolm is president and chief executive officer. He remains in those positions.

Calspray

The election of Howard J. Grady to executive vice president and



Grady

member of the board of directors of California Spray-Chemical Corporation was announced by A. W. Mohr, president, following a meeting of the Calspray board of directors.

In making the announcement, Mr. Mohr stated that Mr. Grady will assist in the over-all management of the company at the Head Office in Richmond, California. For the past 10 years, Mr. Grady has served as Calspray's regional manager, Marketing—East, with offices in Washington, D. C.

Mr. Grady joined Calspray in 1926 as a research entomologist, and subsequently served as European representative, then branch manager of their Portland office, and later manager of the Pacific Northwest sales district.

Cecil M. Crutchfield has been named district manager of the South-Central area for Calspray, it was announced by E. J. Stripling, Jr., Southeast regional manager.

Headquartering at Dallas, Texas, Mr. Crutchfield will supervise operations in Texas, Oklahoma, and parts of Arkansas, Louisiana and New Mexico. He has been with the company for 12 years, and formerly was district manager for the Mississippi Delta, with offices at Memphis, Tenn.

A. A. C.

E. R. Steltzer has been named assistant superintendent at the Cincinnati plant of The American Agricultural Chemical Company, D. S. Parham, vice president in charge of production, has announced. At Cincinnati, Mr. Steltzer will be responsible for production under Superintendent A. B. Rusche. He was formerly located at the A.A.C. Three Rivers plant at Phoenix, N. Y.

Replacing Mr. Steltzer at Phoenix is K. R. Treiber, previously assistant superintendent at A.A.C.'s New England plant at North Weymouth, Mass.

Charles T. Claxton has been named to the staff of the Soil Service Division of The American Agricultural Chemical Company at New York City, according to O. C. Leetun of the Service Division.

Mr. Claxton, who receives his masters degree from Virginia Polytechnic Institute this year, will serve as an agronomist.

Shell Chemical

E. F. Bashor has been named district sales manager of Shell Chemical Corp.'s San Francisco Agricultural Chemicals district, succeeding L. F. Stayner, who is retiring.

Mr. Bashor joined Shell in 1938 when the company purchased the insecticide business of Balfour, Guthrie & Co., for whom he had been working.

U. S. Potash

The following changes in the organization of the sales department



Lowell

of the United States Potash Company Division of the United States Borax & Chemical Corporation have been announced: Ben R. Pickering, sales representative for agricultural accounts in the northeast territory, is being reassigned as sales representative for all industrial accounts. He joined them in 1951.

Darrel D. Lowell, who joined them in 1958, has been appointed to succeed Mr. Pickering as agricultural representative in the northeast territory.

Philipp Brothers

Kenneth D. Morrison, vice president of Philipp Brothers Chemicals, Inc., has announced that his son, Tom Morrison, has joined the Agricultural Division in a sales capacity, after his recent release from the Army. Prior to his military service, he had been engaged in fertilizer production operations.



Morrison

Philipp Brothers has offices in New York City, Boston, Providence, Baltimore, Philadelphia, Chicago and Portland, Conn.

Federal Chemical

Lawrence Farison, Ohio State University graduate, has joined Federal Chemical Company as an agronomist, headquartering at Columbus, Ohio.

Wheelabrator

Thomas S. McCrory has been appointed regional manager of Wheelabrator Corporation's West Coast sales, Los Angeles, supervising their present Seattle, San Francisco, and Los Angeles territories.

Allied Chemical, Canada

Allied Chemical Canada Ltd. has appointed Arthur Bewley as comptroller and A. J. Wilson as treasurer. Both have been with the company for many years.

Agricultural Chemicals Ltd.

D. W. Stewart has been appointed agronomist for Canada by Agricultural Chemicals Ltd., and H. R. G. Campbell is now manager of the London, Ont., plant.

Potash Institute

Dr. Robert D. Munson, formerly in charge of the Tennessee Valley



Munson

Authority's fertility-economic research projects, has joined the American Potash Institute as an agronomist for the Institute's Midwest Territory, it was announced by Dr. H. B. Mann, president of the Institute in Washington, and Dr. Werner L. Nelson, Midwest manager of Lafayette, Indiana.

Dr. Munson will work out of St. Paul, Minnesota, serving Wisconsin, Minnesota, and North and South Dakota. He is an experienced farmer, teacher, and research scientist, specializing in economics-of-fertilizer use research.

Monsanto

The election of Patrick J. Dowd to be treasurer of Monsanto Chemical Company was announced by president Charles Allen Thomas.

Mr. Dowd, who assumed his new duties Sept. 1, has been director of administration for the company's Overseas Division. He succeeds Edward D. Toland Jr., who has resigned.

L. L. Baseler who has been appointed director of administration of the division has served as associate director of marketing for that division since April, 1958.

Thornton C. Jesdale has been appointed assistant to the director of marketing of their organic chemicals division, after serving with the company's corporate marketing group.

The appointment of Russell H. Crouse as production superintendent of the inorganic chemicals division's plant at Soda Springs, Idaho was announced by R. R. Rumer, plant manager. He replaces W. P. Dunlap Jr. who has accepted a position as production superintendent at Mobay Chemical Company's New Martinsville, W. Va., plant.

N.P.F.I.

Dr. Laurence C. Walker will be remembered by our readers as the author of the forestry article run here in September 1957. Written especially for Commercial Fertilizer magazine, it was titled "Fertilizing Southern Pines."



Walker

As announced last month in our pages, Dr. Walker has accepted a temporary appointment as chief forester for NPFI, taking a leave of absence for the purpose from his post as associate professor of forestry at the University of Georgia.

Kraft Bag

George W. Fleck has joined the sales staff of Kraft Bag Corporation, working out of Charlotte, N. C. He will cover most of North Carolina, South Carolina and eastern Tennessee for both multiwall bags and the Kraftpacker Open Mouth Bag Filling Machine, for which Kraft is exclusive sales agent. Mr. Fleck was formerly with Union Bag-Camp Paper Corporation.



Stroud



Peacock

Smith-Douglass

E. Bruton Peacock has been appointed manager for the Smith-Douglass Wilmington, N. C. operation, the company announced from its Norfolk, Va. home office. Mr. Peacock formerly was manager at Kinston, N. C. where he will be succeeded by Walter Stroud, Jr.



Eakes

E. Kendall Eakes, Rocky Mount, N. C. has been named sales assistant to M. W. Darden, manager of the Smith-Douglass Norfolk branch. John R. Dalrymple, who has been Wilmington manager, will be transferred to Norfolk sales at Rocky Mount, N. C.

Ferro

John R. McCord has been named to the newly created position of director of marketing of Ferro Corporation, according to Harry T. Marks, president. In his new position Mr. McCord will be responsible for coordinating the marketing activities of the company and all of its divisions. Mr. McCord has been with Ferro since 1953.

Mississippi River Chemical

Bernard M. Machen has joined the sales department of Mississippi River Chemical Company as assistant sales manager, according to John L. Sanders, sales manager. Mr. Machen will make his headquarters in St. Louis, Missouri and will primarily be in charge of national accounts. He will also assist in all sales activities of the Company.



Machen

Mr. Machen comes to Mississippi River Chemical Company with many years of experience in the fertilizer field. Until recently he was employed by Monsanto Chemical Company and prior to that time was with Allied Chemical Corporation.

Canadian Association

Dr. R. T. Allman was elected president of the newly-formed Canadian



Allman

Fertilizer Association at its initial convention at Murray Bay, Que., late in August. Dr. Allman, who is president of Bradford Fertilizer and Chemical Co. at Bradford, Ont., has been associated with the fertilizer industry in South America, China, Greece, Poland, France, Italy, and other countries.

Hooker

Edward J. Bissailon, Barrett B. Erown, and Charles D. Crosby have been advanced to new executive positions in the phosphorus division of Hooker Chemical Corporation, it was announced by F. Leonard Bryant, vice president-production, at the corporation's Niagara Falls, N. Y., headquarters.

Mr. Bissailon, recently appointed division engineer, is named division assistant production manager. Mr. Brown, who has been an assistant production superintendent at Hooker's Niagara Falls plant, now becomes technical manager for the phosphorus division. Mr. Crosby, formerly purchasing agent for the Columbia, Tenn., plant is appointed division purchasing manager.

The phosphorus division includes plants at Columbia, Jeffersonville, Ind., Adams, Mass., and Dallas, Tex., which were operated as the Shea Chemical Corporation until merging into Hooker last May. The division office for manufacturing operations is located at Jeffersonville where these executives will be located.

George C. Taylor has been named an assistant comptroller; he had been vice-president-finance of Shea Chemical. Daniel J. Lyons has been appointed to the newly created position of general auditor; he joined Hooker in June on a special assignment in the Phosphorus Division.

Hooker has established a new traffic department located at corporation headquarters in Niagara Falls, N. Y. to coordinate traffic activities four Phosphorus Division plants at for a number of plants including the Adams, Mass., Columbia, Tenn., Dallas, Tex., and Jeffersonville, Ind.

Percy T. Brewbaker, recently appointed traffic manager for the Phosphorus Division (formerly Shea Chemical Corporation) and director of traffic for Shea since 1953, has been named general traffic manager.

changes

DuPont Moves Pacific Office

Du Pont Pacific Coast district sales headquarters for its nitrogen products section was transferred from San Francisco to Los Angeles September 22. In announcing the location change, Francis M. Jornlin, sales manager, said additional facilities in the new headquarters will provide increased services to the fertilizer and feed industries.

Marion N. Grady will continue as district manager. Dexter M. Thompson and Lawrence J. Munzenmaier will continue as sales representatives for "NuGreen" and "Uramite" fertilizer compounds, and the firm's feed compound in the southwestern and northwestern states, respectively.

The new address is 2930 E. 44th St., Los Angeles 58, Calif.

Union Bag-Camp

Union Bag-Camp Paper Corporation has announced that it is negotiating a contract to acquire all of the issued and outstanding stock of Universal Paper Bag Company of New Hope, Pennsylvania, a multi-wall bag manufacturer.

Abbe Engineering Moves

Abbe Engineering Company moved its general sales office on October 1 to larger quarters in the Graybar Building at 420 Lexington Ave., New York 17, N. Y. Their new telephone number is ORegon 9-7636. The centrally located midtown office was selected to give better service to Abbe customers and regional sales personnel in their visits to the New York general office.

Sulphur Export

The Sulphur Export Corporation, with headquarters at 375 Park Avenue, New York, has expanded its operations, as explained in a statement from vice president Paul W. Douglas:

"With reference to our previous cabled announcement, we are pleased to confirm that Jefferson Lake Sulphur Company and Duval Sulphur & Potash Company have joined the Sulphur Export Corporation, with their export tonnage being handled through Sulexco distribution arrangements in the same

manner as the export business of Freeport Sulphur Company and Texas Gulf Sulphur Company."

Yale's Virginia Representative

The Virginia representative for Yale industrial lift trucks and tractor shovels, S. L. Cooper Company, has been reorganized and expanded as Richmond Materials Handling Corp. with headquarters at 2303 Westwood Ave., Richmond, Va. E. K. Rudisill is president of the new corporation. The firm's new building houses service facilities, and complete replacement parts department. In addition, mobile service units will be maintained to handle preventive maintenance programs and service work in users' locations.

Joy Moves Boston Office

Joy Manufacturing Company has relocated its Boston office, which distributes the firms line of air compressors, dust collectors, fans and conveyors throughout the New England states.

Formerly at 88 Brookline Avenue, Boston, Mass., the office is now located on Second Avenue, Burlington, Mass. D. L. Archibald, Industrial Division district manager, says the office will also serve as headquarters for the company's Mining and Construction Division serving the New England area.

'Hi-Flo' New Trade Name For Davison Triple Super

Davison Chemical Division of W. R. Grace & Co. has adopted "Hi-Flo" (trademark applied for) as the trademark of the division's line of triple superphosphate products processed at Bartow, Fla. The name was chosen to emphasize one of the outstanding qualities of the products.

Offered are "Hi-Flo Gran-U-Lated Triple Superphosphate," guaranteed minimum 46 per cent available phosphoric acid (P_2O_5), for direct application and dry mixing; "Hi-Flo Run-O-Pile Triple Superphosphate," 46-47 per cent available phosphoric acid (P_2O_5) for mixed fertilizers—ammoniators and dry mixers—and "Hi-Flo Blend-Phos Triple Superphosphate," 45-46 per cent available phosphoric acid (P_2O_5), for dry mixing only.



NOW... ONE MIDWESTERN SOURCE FOR THREE BASIC FERTILIZER MATERIALS

With the addition of a phosphatic solution plant to its chemical complex at Tuscola, Illinois, U.S.I. can now supply a large area in the Midwest with a variety of fertilizer materials that will meet all your needs for these components:

PHOSPHORUS . . . in the form of Phosphatic Fertilizer Solution (wet process phosphoric acid, 54-55% P_2O_5). This is available from U.S.I.'s new plant which produces 30,000 tons/year of P_2O_5 . This chemical frequently enables you to make your regular and special granular grades of fertilizer at lower cost . . . and to make higher analysis grades.

NITROGEN . . . available as anhydrous or aqua ammonia, plus 16 types of nitrogen solutions including urea types.

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of fertilizer quality. Plants, not only in Tuscola, but also in Sunflower, Kansas, and Dubuque, Iowa.

To help you make the most of these various products, U.S.I. Technical Service people are ready to work with you. The U.S.I. Engineer will help you trouble shoot, set up formulations, work with you on experimental runs, consult with you on equipment selection, and can also offer U.S.I.'s laboratory facilities for more intensive investigations.

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ARIZONA

Southwestern Agrochemical Corporation, Chandler, is completing plans for financing a \$4,000,000 anhydrous ammonia plant, according to President **C. P. Gould**.

Agrochemical now operates a complex fertilizer plant, and proposes to build the ammonia facility adjacent to this operation. The new unit, expected to greatly improve the company's operating efficiency, will have a capacity of 21,000 annual tons of anhydrous ammonia.

ARKANSAS

Planters Cotton Oil, Pine Bluff, suffered an electrical flash which caused a fire that melted two large steel I-beams before firemen could bring it under control. Damage to the plant itself actually was minor. The cause is listed as a short-circuit in one of their high-voltage electrical lines leading to heavy equipment.

CALIFORNIA

Valley Nitrogen has the go-ahead for building the West Coast's first coop fertilizer plant. The directors approved a \$9,000,000 budget, and expect by next month to have chosen the site from among four under consideration. **Carl H. Haas**, who will serve as manager and who is president of the Cooperative, says he will dissolve his own fertilizer company, in Ceres. A limit of \$5.-250,000 has been placed on the stock to be sold; the remainder comes from the Bank for Cooperatives, as reported here last month.

COLORADO

Golden Earth Corp., Denver, has been incorporated for \$50,000 by **James S. Henderson**, **Jane Luetke** and **R. L. Wallace**, directors. Purpose: to deal in fertilizers, etc.

FLORIDA

Citrus Culture Corp., Mt. Dora, suffered a fire estimated at \$250,000



loss, September 13. An employee, **R. D. Holloway**, who lives near the plant, spotted the fire at 5 a.m. The fire department saved all wheeled equipment except one old truck, some \$50,000 worth of equipment. This made it possible for personnel to continue grove management service.

Other fertilizer concerns in the area have come to the aid of the concern, and president **J. E. Fortner** expects to be able to meet all commitments. But the building, all equipment, and some \$50,000 worth of chemicals and mixed goods were lost—only partially covered by insurance.

* * *

Armour Fertilizer expects to get into production in the new plant at Davenport late this month or early next month. **Frank Coffee**, who will be general manager, has already moved and key personnel drawn from the Jacksonville division are expected to follow shortly.

* * *

Loncala Phosphate Company has moved its offices to High Springs, where it now occupies a new air-conditioned building on northwest First Avenue. The offices were formerly located at the nearby town of Clark.

ILLINOIS

A & O Grain Co. now has a special permit from the Decatur County zoning board which will permit the operation of a pelletizing fertilizer plant at Greenswitch.

* * *

Largest single shipment of nitrogen solutions for agriculture of the year, requiring a 40-tankcar train and eleven tank trucks, was dispatched from the **Sohio Chemical Company** plant at Lima, Ohio September 10 to the plants of **Aylco Liquid Fertilizer**

Company and their dealers in central Illinois.

Edwin Aylward, Aylco president, and other company officials were on hand to see the transportation fleet depart. In this shipment was more than 400,000 gallons of nitrogen solutions. Aylco Liquid Fertilizer is using the nitrogen to manufacture mixed liquid fertilizers and also for direct application.

Fourteen of the cars of nitrogen solutions were for delivery to the Aylco home plant in Sullivan, Illinois; six to the Aylco plants in El Paso, Ill.; five to Harvel, Ill., and five to Rochester, Ill. In addition, cars from the train were diverted to 13 Aylco dealers in the state.

KANSAS

Garden City Coop., Garden City, which has announced addition of a 32 by 140 foot building at Lowe for storage of 1150 tons of fertilizer in pelletized form, has ordered more than a thousand tons of bulk and bag ammonium nitrate from **CCA's Lawrence plant**—the largest single order CCA has had.

MISSISSIPPI

Dixie Fertilizer Company, Inc., has been chartered at Jackson for \$1.-000,000.

* * *

First Mississippi Corporation will build a million-dollar multiwall bag plant, according to its president, **Fred A. Anderson, Jr.** Yazoo City is the probable site, although a definite location hinges on local stock sales. Plans call for conversion of 1000 tons of raw paper monthly into multiwall products.

NORTH CAROLINA

Piedmont Liquid Fertilizer Co., Matthews, is now in production with three 1300-gallon storage tanks and an overall investment of some \$25.-000. It is the first liquid fertilizer operation in that immediate area. Owner is **Joe L. Buice**.

OHIO

Farm Bureau Cooperative Association is dropping its old insignia as



Top: Officials of Aylco Liquid Fertilizer of Sullivan, Illinois, witnessed dispatch of a forty-car train of nitrogen to their Illinois plants and dealers were (left to right): **Edwin Aylward**, **William Ingram**, **Charles Michael**, **Cecil Baylor**, **Dean Poole** and **Dwayne Haas**.

Bottom: The forty-car train as it pulled out of **Sohio Chemical Company's** plant at Lima, Ohio, in the largest single shipment of the year.



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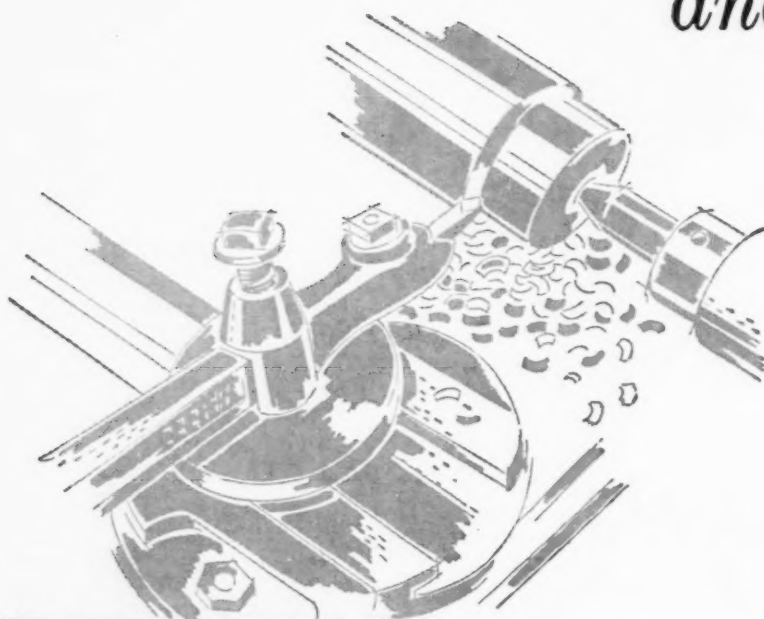
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This fact may not be too well known: the steel industry consumes about 7% of all the elemental Sulphur or Sulphur existing in the form of sulphur gases, etc., produced in this country. Most of this Sulphur serves the steel industry in the form of Sulphuric Acid where it is used in pickling steel products but also to a considerable extent in plating them. And certain machine steels carry an appreciable amount of 'planted' Sulphur to impart desirable machining qualities. Seven percent of the total elemental Sulphur and equivalent Sulphur tonnage is quite substantial. Its use in steel emphasizes the importance of Sulphur to our whole economy. Much of this tonnage of steel-used Sulphur starts out at our mines in Texas where we serve as a major supplier of Sulphur to the manufacturers of Sulphuric Acid.

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rapidly as possible, and substituting the new trade name "Landmark," according to general manager Kenneth N. Probasco. An official has estimated that the changeover would cost a million dollars, because it goes on products that run up to \$64,000,000 in annual sales. The federation has five fertilizer plants.

SOUTH CAROLINA

Planters Fertilizer and Phosphate Company has completed its new 20-ton-hourly granulating plant at Charleston, and plans to distribute the product throughout South Carolina and in portions of North Carolina, Tennessee and Virginia; their pulverized mixing unit will also remain in operation. The firm also operates a mixing plant at Charlotte, N. C. and a subsidiary plant at Sumter, S. C.

TEXAS

Dallas city fathers have ordered preparation of plans for a \$300,000 fertilizer plant in connection with expansion of the city's sewage disposal facilities. **Powell & Powell**, consulting engineers, are preparing the proposal, which involves only a pilot plant at this stage.

UTAH

Western Phosphates, Inc., has earmarked \$500,000 for an expansion program at the Garfield plant, Stauffer Chemical Co., parent organization of Western, has announced. President **John Stauffer** said the expansion will be on production facilities of phosphate and ammonia fertilizers.

Also in ownership of Western is **Garfield Chemical and Manufacturing Co.**, an affiliate of **American Smelting and Refining Co.** and **Kennecott Copper Co.**

The expansion will bring about a 10% hike in total volume of phosphate rock, used in making a line of treble superphosphates, ammonium phosphate, and phosphoric acid at the plant. The rock is mined in Utah, Idaho and Wyoming by **San Francisco Chemical Co.**, another Stauffer affiliate, and is shipped into Garfield plant.

Mr. Stauffer said also that a decision on taking up option on phosphate deposits near Vernal will probably be made within a year.

WISCONSIN

Farmco Service Cooperative is installing a new acid type granulation process in their Antigo plant. The specific process is one which worked well on a pilot scale at the Prairie du Chien plant when Mahmoud

Sheihata, who heads up the co-op's research and quality control, installed it there.

CANADA

Fisons (Canada) Ltd., a wholly-owned subsidiary of the British firm, is now marketing new agricultural chemicals in Canada. **International Fertilizers Ltd.**, Quebec, which has marketed some Fisons products, will continue to act as one of the distributors of the Canadian subsidiary.

* * *

Potash deposits in the Saskatchewan region are being searched out at an increased rate. **International Borax** has started drilling to prove up reserves sufficient to warrant a mining operation. **Potash Co. of America** has a shaft down 3500 feet where they have struck potash in what is said to be the world's largest deposit. They already have \$20,000,000 in the operation, and expect commercial operation this Fall. **International Minerals & Chemical** has its Esterhazy shaft down 1800 feet. And some ten concerns are studying the potash potential of the area.

CUBA

Matanzas has been chosen as the site of a full-line synthetic nitrogen plant planned by a recently organized firm, and due to be in operation within two years. Anhydrous ammonia, ammonium nitrate, urea, ammonium sulfate, and nitrogen solutions are to be produced there.

Fuel oil residues form expanding petroleum refinery operations will provide hydrogen for the ammonia, but will probably have to be supplemented by imports; sulfuric acid for ammonium sulfate processing will come locally from a new operation of **Rometals**.

Most of the nitrogenous materials will be channeled into fertilizer output, although some of the ammonium nitrate is expected to find commercial explosive applications and a portion of the urea will go into plastics.

GREAT BRITAIN

Dow Chemical's new subsidiary, **Dow Agrochemicals**, will be both a manufacturing and marketing organization for crop chemicals in Great Britain. British agrochemist Dr. Walter E. Ripper has been named director of the subsidiary.

IRAQ

The Development Board is going right ahead with the sulphur-recovery plant near Kirkuk. It will have a capacity of 300 daily metric tons

of elemental sulphur, some to be used in proposed fertilizer and rayon plants, the surplus to be exported. Contracts have been awarded for construction.

IRELAND

Celmici Teoranta, a state-owned Irish company, has been instructed to prepare a plan for a new plant and the Blackwater Bog, designed to produce 100,000 annual tons of ammonium nitrate fertilizer. Milled peat will be the raw material. A separate state-owned company will be set up to operate the plant.

ISRAEL

The Ministry of Commerce has been studying a plan to establish a sulphuric acid plant for production of sulphuric from gypsum to be mined at Mahtesh Ramon. It will be consumed largely in producing concentrated superphosphate using phosphate from the Oron mines.

KOREA

The Commerce Industry Ministry is going through the preliminary steps which may lead to construction of a fertilizer plant to produce either urea or mixed fertilizer, as the study may indicate. It is planned to locate the new facility, if built, in the Southern portion of the Republic. Two plants are now building in Southwestern Korea, with combined production of 170,000 annual tons of urea.

* * *

The Combined Economic Board has increased from \$42,700 to \$77,700 its allocation for a preliminary engineering survey for a contemplated second ICA-funded fertilizer plant. **Smith, Hynchman and Grylls** is the technical consultant group handling the survey.

SOUTH AFRICA

African Explosives and Chemical Industries, an Imperial Chemical Industries subsidiary and the only anhydrous ammonia producer in the Union of South Africa, has announced plans for doubling annual capacity to 145,000 tons by 1960. Urea production facilities will also be installed.

Progress is reported to be satisfactory on construction of the plant at Sasolburg, slated for 1959 completion, which will produce 200,000 annual tons of superphosphate and 112,000 tons of granular compound fertilizer.

USSR

Russia has released the fact that its \$54,000,000 of chemical exports in 1956 included 14,900 tons of sulphuric acid and 1,200,000 tons of phosphatic fertilizers.

U.S.I. in Full Swing With Electronic Orders, Controls

A modern, high-speed communications network of more than 7,500 miles of leased, private wires linking 40 plants, offices, warehouses and ordering and shipping points in 27 cities by teletypewriter is speeding deliveries to customers of National Distillers and Chemical Corporation and its U. S. Industrial Chemicals Co. Division in all parts of the country. As much as four days is being saved from shipping and delivery dates.

While most important as a customer aid to provide quick and ac-

curate order transmittal, this is just one of the benefits the new system provides. The network also serves as an integral part of an automated data processing system making essential information currently and simultaneously available to the company's executive sales, production, credit, traffic and accounting departments as well as to the plants or shipping points involved.

The National Distiller's system is one of the most advanced and efficient in the chemical industry.

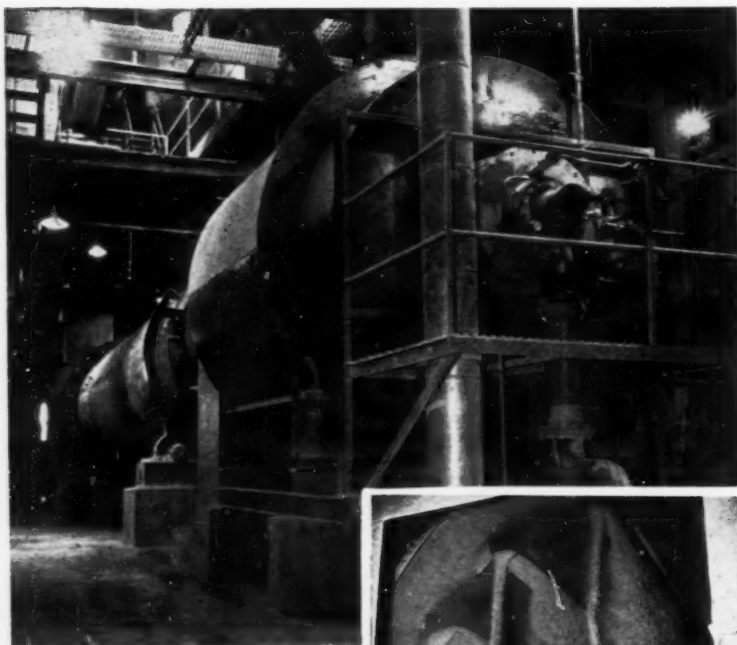
The communications system has

been engineered to serve the diverse requirements of National's U.S.I. Chemical Division, which has chemical plants, sales offices and warehouses throughout the country. It operates on a decentralized basis with most orders accepted and approved locally. An order placed at one of the U.S.I. sales offices is typed just once, with 90% of the information fed automatically to the typewriter. The resultant tape is fed into the teletype system where it serves to prepare all necessary shipping and invoicing papers at the appropriate plant. Meanwhile a short form of the tape with only the essential statistical information is prepared automatically and sent to the New York office. Here it is automatically converted to punch card form and an electronic computer converts the condensed information into necessary sales and inventory control information.

Installation of the National Distillers' communications system was begun in June, 1957. After a "shake-down" period of several months, the system took over the speeding of orders and production and shipping directives. Then initial phases of integrated data processing were added, and, finally, development of additional data for management control was undertaken.

U.S.I.'s executives are confident that its communications-data processing system will keep the company out in front in service to chemical customers at the same time anticipating the expansion that most economists predict for the years ahead without a corresponding increase in administrative overhead.

The communications center at U. S. Industrial Chemical Co.'s New York headquarters. Here order releases are sent to the shipping points involved. System map is seen in background.



TOP: This 8'-0 x 60'-0 rotary dryer removes excess moisture and completes the granulation. Dryer is oil heated.

RIGHT: The lifters, with their unique cup-like design and their staggered arrangement in the unit, cause the granules to be evenly distributed.



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Committee Calls for Solutions Code System

A special industry work group has recommended that the National Plant Food Institute adopt a new coding system, based on the customary N-P-K nomenclature, for naming nitrogen solutions.

In accordance with instructions from its board of directors, the Institute will have the coding system adopted as a standard in compliance with U. S. Department of Commerce procedure.

A producer, under the new system recommended by the committee, would prefix the code with his own company trade name; this would be followed by the total nitrogen content in percent, with decimal point omitted; next, in brackets, would follow the percentage composition, in sequence, of ammonia, ammonium nitrate, urea, and next, any other significant nitrogen component, all rounded off to the nearest whole number.

Under the coding system, a John Doe solution containing 41.2 percent total nitrogen consisting of 22.2 percent ammonia, and 65.0 percent ammonium nitrate would be identified as follows: John Doe Solution 412 (22-65-0).

The committee feels that the new system offers flexibility inasmuch as other components, for example sulfate of ammonia, can be designated simply by adding the letter S in the trade name and showing the percentage composition with a fourth digit in the bracket.

Ammonia Use Up 14% Thru July, Says Institute

The sale of anhydrous ammonia as fertilizer increased 14 per cent for the first seven months of 1958 over the same period of 1957, according to returns from a survey conducted by Jack F. Criswell, executive vice-president of the Agricultural Ammonia Institute, Memphis, Tenn.

Total tonnage reported in the survey from 152 distributors was 108,793, said Mr. Criswell. This is about one-fourth of the amount used annually by American farmers. Two-thirds of the dealers who reported showed increases in their business, he said.

The indicated upturn was unexpected, said Mr. Criswell, in view of widespread reports earlier in the crop year that weather conditions were hampering application. He said he felt that increasing farmer acceptance, along with generally higher rates of application, accounted for most of the gain.



ABOVE: New Administrative & Research Center of International Minerals & Chemical Corporation. Buildings shown are, left to right, Operations Building, Operations Annex, Administration Building, Employees' Lounge, and Cafeteria. BELOW: Bright and cheerful, open atmosphere of the Center keyed in the colorful employees' lounge. Reception desk is shown in the background.

New Administrative, Research Center For International Minerals & Chemical

International Minerals & Chemical Corporation formally opened its \$5 million Administrative and Research Center in suburban Skokie last month with a series of open houses for a total of more than 3,000 guests.

There are 600 employees at the new Center, which comprises five buildings just completed and a Research Center built on the 21-acre site in 1951. The Center is the newest addition to the expanding greater Chicago skyline and is described as a new and unique concept in business environment.

It fronts on a central plaza with a patio and reflecting pool, is landscaped to create a campus atmosphere, has its own heliport, located atop its Administration Building, the first office building in the country with its own heliport incorporated in the original design.

Louis Ware, IMC board chairman, described the buildings as a "symbol of IMC's first half century of progress and an appropriate setting for future corporate growth." The Company started in 1909, producing phosphate and mixed fertilizer, and has grown from \$5 million in annual sales then to more than \$100 million

now, with 90 percent of that gain coming since the Corporation moved its headquarters to Chicago from New York in 1941.

"These facilities, specifically designed to fit the administrative and product-division structure of the IMC organization, will provide space for estimated growth through 1965 with sufficient ground area for further expansion as needed."

The buildings themselves incorporate every advantage of modern office construction, with maximum efficiency of arrangement providing 89 percent usable space in the building's office floors. The Center has a total gross square footage of 187,046.

Quiet! Engineers Studying Noise Abatement Program

The 9 and 10 of this month the Hotel Sherman, Chicago, will be the scene of discussion, that may well become noisy, of quiet and what it means to health, safety and, we assume, efficiency. The occasion is the Noise Abatement Symposium, which is sponsored by a number of groups including the American Industrial Hygiene Assn. and the American Society of Safety Engineers.

research results & reports

Grapes are being jointly studied by the Fresno State College and Calspray. The first of a five year series has been completed, and data is being tabulated. It should reveal much about grapes and plant food. Vincent E. Petrucci of the College is working on it with Dr. George Hawks and Dr. Richard Kirsch of Calspray.

Even in wet years it pays to side-dress corn with extra N, says the University of Minnesota. Loren E. Ahlrichs made the report to the American Society of Agronomy meeting recently. Even on water-logged clay loam it showed a 20 bushel yield increase as compared with only a 10 bushel increase from plowing and planting time applications.

Chemotherapeutic compounds, which may develop into treatments for sick plants, parallel to pills for pale people, are under study by Dr. A. E. Dimond of the Connecticut AES. He reported good progress to the American Phytopathological Society.

Lettuce fertilized with phosphate (together with good N applications) shows up in big dividends, according to reports of a two-year research by Dr. O. A. Lorenz of the University of California, CFA reports. Trials with no phosphorus showed a 15.3% cut, while with 160 pounds, the cut ran well above 60%.

Seeding winter pasture crops directly into permanent summer pasture sod has been under study at the Mississippi Agricultural Experiment Station for several years. Early studies indicated that sod seeding could produce as much total winter forage as conventional seeding in prepared seedbeds. They also showed that sod seeding did not harm the permanent summer sods.

Sod seeding wheat in a permanent pasture greatly increased beef production at the Brown Loam Branch Experiment Station. Seeded pastures produced 273 pounds of beef per acre compared to 68 pounds for pastures not sod-seeded.

Weeds are now being killed by a two-foot wax bar, which is dragged across the lawn. Of course it contains a herbicide and this stays on the job in the thin film of wax which is deposited on dandelions and other broadleaf weeds and can-

not be blown away. Chipman Chemical markets it.

A fertilizer mixture that produces a good "lifting" sod in from four to five months, contrasted to the usual two seasons of growth, has been developed through the use of urea-form nitrogens, according to Dr. L. L. Baumgartner, agronomist and technical consultant to the Borden Chemical Company.

The fertilizer mixture was compounded by J. A. DeFrance, A. J. Wisniewski, and J. R. Kollett, researchers at the Rhode Island Agricultural Experiment Station. The compound is 75 per cent ureaform nitrogen, 10 per cent organic nitrogen, and 15 per cent synthetic nitrogen, mixed with superphosphate and potash to produce an analysis of 20-6-4.

Utilizing plots of turf containing 50 per cent Chewing's Fescue, 25 per cent Kentucky blue grass, and 25 per cent Merion blue grass, the fertilizer mixture was tested against a 20-10-5 fertilizer, a standard 8-6-2 (at equivalent rates), and mixes containing 100 per cent ureaform.

Three ureaform nitrogens were used in the Rhode Island studies. All produced similar results. The studies showed that mixtures containing 100 per cent ureaform and those with a large amount of ureaform, such as the 20-6-4 compound, produced a higher per cent stand and greater turf quality.

Some of the test plots were fertilized two weeks before seeding and an equal number were fertilized immediately prior to seeding. The dosage rate of fertilizer was calculated on nitrogen per 1,000 square feet.

Tests showed that eight pounds of nitrogen per 1,000 square feet produced the best results and, particularly in the spring, that plots fertilized immediately before seeding developed a stand of grass of higher quality, Dr. Baumgartner said.

With the eight-pound dosage rate, a good "lifting" sod was developed in from four to five months. Sod of equal quality, if grown under conventional fertilizing practices, would require at least two seasons of growth.

The Rhode Island researchers also conducted a series of tests using four-pound and sixteen-pound nitrogen dosage rates. The four-pound rate produced a good stand of grass, but of inferior quality, while the sixteen-pound rate caused injury.

Gibberellin Notes Flock Into Office

It is not too astonishing that Gibberellin produces a flood of notes to the editorial desks of Commercial Fertilizer Magazine. The astonishing acid does so many proven things, and is still the source of so much research in other fields. Here is a quick rundown of items now on our desks, as we go to press:

From the University of Illinois, agronomists find that spraying soybeans causes longer stems, thus more room for more pods to get into the combine at harvest.

In Connecticut, a druggist at Windsor Locks has raised tobacco with leaves 33 by 24 inches, using gibberellic acid in bomb form from a farm supply house.

Velsicol Gibberellins have been cleared by FDA for use on certain raw agricultural commodities, such as seed treatment of lima beans, snap beans, soya beans, and peas at the rate of $\frac{1}{2}$ gram per 100 pounds. This treatment causes faster emergence. Also, the dipping of seed potatoes in a solution of 1 ppm gibberellins to break dormancy has been approved.

Food and Drug also accepted the spraying of Thompson Seedless and Black Corinth grapes with concentrations of 5 to 50 ppm at the rate of 5 to 50 gallons per acre for increased fruit set.

Merck reports gibberellin passing from research into the stage of commercial use. This was reported by Dr. James M. Merritt, head of the plant product development department of their technical laboratories, while attending the American Institute of Biological Sciences meeting.

While first results of investigations were reported only a year ago at the Stanford, Calif. AIBS meetings, gibberellins are now being used commercially by farmers and fruit growers on substantial portions of their plantings to increase yields and quality on Thompson seedless grapes, cotton, potatoes, celery, tomatoes, and other crops, Dr. Merritt said.

Dr. Merritt attributed this rapid development to intensive efforts by agricultural college research and information staffs throughout the country, as well as to his company's own research. Merck has established 33 grant-in-aid projects on gibberellins at agricultural colleges.

More than 40 new papers on gibberellins were presented at the

recent Bloomington meetings.

Hundreds of acres of grapes in California have been treated according to methods developed by Dr. J. R. Weaver and others at the University of California (Davis), "and with proportionate increase in the yield of high quality Thompson seedless grapes reported at all points as the harvest progresses," Dr. Merritt said.

"Early work with cotton by Dr. V. T. Walhoad, USDA plant physiologist at the Cotton Field Station, Shafter, Calif., showing that 'Gibrel' would increase the set of bolls, is being translated into commercial practice by air and ground sprays," the Merck pioneer worker in gibberellins said. "One, two, and three sprays, beginning when the cotton is 'squaring,' is producing bigger plants with ten to 80 per cent more bolls, which appear to be completely normal," he added.

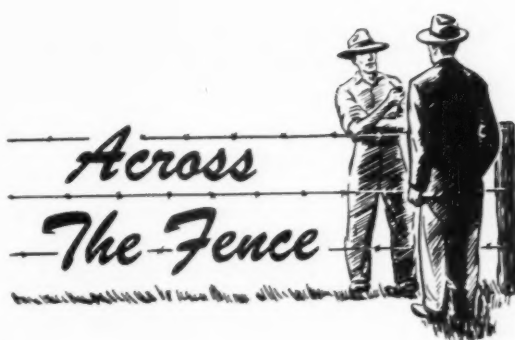
Results with dipping of potatoe seed pieces to break dormancy and stimulate more complete sprouting is very encouraging, Dr. Merritt continued. This verifies investigations conducted earlier by Dr. H. A. Edkins, plant pathologist at the University of Florida, and Dr. Lawrence Rappaport of the University of California (Davis.).

Depending on variety, there have been generally significant increases in the early stand of plants, Dr. Merritt continued, adding, "Very worthwhile increases in yields are apparently developing in many widely separated areas."

"Spraying of celery under commercial conditions has substantiated the early work of Dr. S. H. Wittwer, professor of horticulture at Michigan State University, Lansing," Dr. Merritt said. This has led to highly profitable increases in the yield of marketable celery grown during cool weather, when the size of the stalks and bunches increases as a result of the treatment.

"In addition to these instances where demonstration applications have supported the early work of scientists with 'Gibrel,' conclusive results are being obtained in many other crops. Published reports of results with California citrus have been very encouraging, and interesting results with small grains are being reported."

Twenty-two grants-in-aid established by Merck & Co., Inc., are now in effect this year at leading agricultural experiment stations, to facilitate the work with 16 major crop types, and five different lines of investigation of a fundamental nature.



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South Carolina: Hugh Woodlee, Clemson extension agronomy work leader says the first step in bringing S.C. farm income up to the potential \$400,000,000 annual increase is to encourage each farmer to have a complete soil test report. As a demonstration a county has been selected to test the practical truth of this idea—backed by Clemson, the South Carolina AES, and NPFI.

Clemson has recently issued a circular on fertilizers for S.C. field crops and a Fall Planting Schedule which includes fertilizer recommendations.

Florida: Sansiviera, the familiar house plant, is heading toward a definite role as a future cordage fibre crop for the U.S. High yields on the muck soils at Belle Glade indicate that commercial production might well work out, USDA says.

Minnesota: Farmers are demonstrating that the seemingly expensive way to grow grass turns out to be the best way. One pastured his Guernsey cows on one-third acre of grass per cow. By careful pasture management and \$200 in fertilizer he pastured 21 cows on 7 acres of grass for 77 days. The pasture produced such high quality feed that he saved the \$200 in extra grain and hay, and the land left over for other purposes was velvet.

Great Britain: Farmers had such a tough winter this past year that their "Farming Reporter" magazine advises the saving of fertiliser sacks to use this coming winter to cover hay pikes and bales. By lining them inside with tarred paper, they can keep the hay dry and, we presume, warmer.

—of This and That

—Elbert N. Carvel, president of Valliant Fertilizer Co., Laurel, Del. and a member of the board of directors of National Plant Food Institute, has received the Democratic nomination to the United States Senate from Delaware. He will oppose Senator John J. Williams, the Republican incumbent, at the general election in November. Mr. Carvel is a former governor of Delaware and has been active in politics for some time.

—A Portland, Oregon burglar failed to reckon with the reckoning ability of local police and ended up in jail. When officers approached his auto parked in front of a garden supply shop in the wee hours of a Sunday morning last month, he asked for help, explaining that he was having car trouble. The prowler car skippers, aiming to assist him, noted that the auto was heavily laden with bags of fertilizer. After some questioning, he finally admitted the theft.

—Arthur W. Mohr, president of California Spray-Chemical Corporation told western farm editors, touring Calspray's plant food plant under the auspices of National Plant Food Institute, that the basic concepts of fertilizer manufacture and use have changed drastically in the last three years:

"If our operation here were limited to the manufacture of fertilizers in general use just four years ago, we would be producing only three products. Instead, we are producing nine different products and expect to add more in the near future . . . We know now that the farmer can make more money with a plant food program tailored to his needs than he could possibly save by purchasing general-use, mass-produced chemicals at a lower cost . . . From the vantage point of the manufacturer, a multiplication of products is a multiplication of problems and costs, but he has little choice, since the future of his business depends upon his ability to make money for the customer who buys his products."

Regional Safety Schools

Score Big Success

The series of regional accident prevention schools for the fertilizer industry, sponsored jointly by National Plant Food Institute and the Fertilizer Section of National Safety Council, have met with enthusiastic approval in the first three tryouts.

NORTHEAST

The Northeastern school, held at Ithaca, N. Y. August 14, triggered the series, and met with support of principal fertilizer manufacturers in that section. Attendance was good, and the program format proved itself well-adapted to requirements of the school. George F. Dietz of Fertilizer Manufacturing Coop., Baltimore, who is general chairman of NSC's Fertilizer Section, presided at the sessions. Others among the industry's 'regulars' who appeared on the program were: past fertilizer section general chairman E. O. Burroughs, Jr., F. S. Royster Guano Co., Norfolk; William C. Creel of the N. C. Department of Labor, Raleigh; Elmer Perrine of Allied Chemical's Nitrogen Division; John S. Mark of Farm Bureau Cooperative Assn., Columbus, Ohio; and Carl Gillmeister of G.L.F. Soil Building Service, Ithaca.

Topics covered a range from study of basic safety principles and training schemes to specific equipment and materials hazards of the small fertilizer mixing plant. Elmer Perrine's discussion of safety using liquid materials in a fertilizer mixing program, John Mark's analysis of fertilizer-insecticide mixing hazards, and Carl Gillmeister's outline of a plan for a workable safety program in the small mixing plant were typical of specific subjects on industry problems.

SOUTHEAST

The Southeastern regional school, under direction of Quentin S. Lee of Cotton Producers Association, Atlanta, was held in Atlanta September 4-5, and attracted management and supervisory personnel from 21 plants throughout the area.

Fertilizer Safety Section's vice chairman, George L. Pelton of Smith Agricultural Chemical Co., Columbus, Ohio, was on hand to assist with the presiding, and N. C. industrial safety director Billy Creel was once again a prominent participant

in the program. John Gallagher represented NSC at the sessions.

Among the industry's experienced safety-program participants who handled subjects at the sessions were: Quentin Lee with a presentation on the committee-organization phase of safety team building; Billy Creel with a study of fact-gathering investigations that follow accidents; and Bill Stone of Wilson & Toomer Fertilizer Co., Jacksonville, digging into his experiences to stress the importance of plant housekeeping.

Quentin Lee aptly stated that the majority of the working force in plants through the Southeast literally grew up in fertilizer plants . . . and those now surviving are here for the most part because they learned to protect themselves before

plant management ever formulated any formal safety-consciousness. Old workers warned new workers. But "these workers are at a disadvantage now because fertilizer plants are becoming mechanized faster than they can learn what the hazards are or how to protect themselves."

A safety committee should be organized for each department or job where one can be justified, he contended, and should consist of a minimum of three men including a chairman, who would preferably be the foreman. The committee should be given authority to enforce safety regulations and to make further safety suggestions to management, and should be issued green badges to identify their important assignments.

And, he concluded, safety committees must not take a back seat or become inactive during the rush season when every effort is turned toward maximum production, because this is just the time that they need to function strongest.

Billy Creel, discussing accident

At the Southeastern Accident Prevention School

1. John Gallagher of National Safety Council and Program Director Quentin S. Lee, director of plant food production for Cotton Producers Association, Atlanta.
2. W. C. "Billy" Creel, safety director, N. C. Department of Labor; Gaither T. Newnam, safety and insurance director, Smith-Douglass Co., Norfolk; W. N. Cox, Jr., industrial safety professor, Ga. Institute of Technology; and Fertilizer Safety Section Vice Chairman George L. Pelton, personnel director, Smith Agricultural Chemical Co., Columbus, Ohio.
3. W. A. Menges of Mulberry, Fla., Robert A. Sorrow of Bessemer, Ala., and A. H. Saunders of Macon, Ga., all with F. S. Royster Guano Co.
4. J. D. Lee of Southern States Phosphate and Fertilizer Co. and W. T. Williams of Jones & Hill, both from Savannah, Ga., and W. A. Stone, superintendent of Wilson & Toomer Fertilizer Co., Jacksonville, Fla.
5. S. C. Allison of Adel, Ga., Harold Green of Cordele, Ga., and H. Grady Parr of Athens, Ga., all with Cotton Producers Association's plants.
6. W. J. Camp of Atlanta and A. E. Lord of Savannah, Ga., both with Cotton Producers Assn.
7. Cecil Alvis, C. O. Smith Guano Co., Moultrie, Ga.; W. R. Tucker of Athens, Ga. and Donald R. Seay of Spartanburg, S. C., both with F. S. Royster Guano Co.
8. E. F. Webb of Montgomery, Ala. and G. D. Britt of Charleston, S. C., both with F. S. Royster Guano Co.



investigations, admitted that they were "hindsight" but were highly effective in avoiding recurrences and in setting up new precautions. He said the investigation should be made as soon as possible after the accident by a committee of three—somebody in charge of safety who is directly responsible to management, the section foreman, and a worker who is looked up to by his fellow employees as an informal leader. It is desirable for the group to pre-meet before going to the scene of the accident, where, he warned, they must seek information, not try to place blame.

Harping on his familiar theme of good plant housekeeping, Bill Stone pointed out that it not only saves lives, but also saves money . . . an important point when market conditions put a profit-pinch on the mixer. You can't expect safe performance of a worker, he reminded, unless you provide him a safe place to work.

Whatever time it takes to get safety across to the individual worker is time well invested, he emphasized, and sometimes you have to keep pinpointing consequences until you strike a chord that touches that particular employee.

Pointing out a number of specific hazards, he cited the action he has found most satisfactory in eliminating them, and stressed the importance of signs and other constant reminders. After all, he illustrated, you undoubtedly know what the speed limit is on the highways of your state, but it takes signs along the road to keep you reminded.

MIDWEST

The Midwest regional school was held at National Safety Council's headquarters in Chicago September 10-11. Spencer Chemical's director



Smith

of safety, John E. Smith from Pittsburg Kansas, was school chairman and set up the program with the assistance of NSC's director of industrial training, Glenn Griffin. N.P.F.I.'s Midwest office also aided in preparations.

Twenty eight men, representing a big segment of the industry in that section, were on hand for the sessions. The program here, too, followed the general format for regional schools, again with special emphasis on problems predominant in this region.

Fertilizer Safety Section Vice-Chairman George Pelton was here, also, to introduce the plan and outline the purpose of the school. Glenn Griffin, John Gallagher, R. L. Benson and Dave Arm were on hand to represent NSC and participate in the program, as was North Carolina's Billy Creel, who set up the experimental regional schools in 1956 and 1957 which served as a guide for establishment of the current series of supervisor's safety training programs.

Other industry folks taking part in the leadership of the school, in addition to John E. Smith, were: C. Z. Greenley, director of insurance and safety for International Minerals and Chemical Corp.; R. C. Fitzgerald, Smith-Douglass' plant manager at Streator, Ill.; and Spencer Chemical's Larry Lortscher of Columbus, Ohio.

Dave Arm gave fundamentals of accident prevention; Glenn Griffin talked about personal factors in safety, and about teaching job skills and teaching safety; R. L. Benson covered safety materials and services available from the Council; and John Gallagher handled student participation phase, when the plant supervisors divided into groups to formulate and select problems for study. The groups then traded problems and worked out a solution for each.

Billy Creel dealt with the topics of discovering accident hazards, inspections, investigations, reporting, and industry safety standards.

John Smith discussed the foreman's safety job as applied to all line management and supervisory people. He covered: knowing the importance of safety; training workers to do their jobs safely; explaining safety rules; taking steps to prevent minor injuries from becoming serious; enlisting active safety participation of workers; setting a good example yourself; and following up on the program.

R. G. Fitzgerald gave the benefit of his experience with fertilizer-in-

secticide mixtures, covering several years of mixing Aldrin concentrates into fertilizers. There's a considerable margin of safety in handling these materials provided proper precautions are observed, he pointed out, and the chief hazard is accidental exposure.

Excessive exposures can be avoided by adequate ventilation control measures and good housekeeping practices, he advised; well maintained change rooms, showers and wash basins are a must, with insistence on thorough washing of skin after exposure. Protective clothing with mandatory daily changes must supplement respirators, goggles and solvent resistant synthetic rubber gloves.

But the best facilities and equipment are useless unless actually used, he cautioned, and experience has taught him that regular inspection by supervisors or foremen are the best enforcement method. Mr. Fitzgerald concluded his presentation with a review of labeling requirements, and displayed an excellent label format which his firm has used.

Larry Lortscher talked about handling liquids with safety at a fertilizer plant. Recalling many of the plants he has visited, he surmised that safety is frequently not taken seriously. Often employees seem to be in too big a hurry to do a thing safely. Others feel there's an air of manliness about neglecting precautions, as men who have developed a tolerance to ammonia vapors razzing others for not being able to take it.

He stressed importance of protecting the eyes in handling liquid raw materials: without eye protection, the hazards of any situation are greatly increased; it's bad enough to try to get away from a discharging relief valve holding one's breath, much less having to do it from memory with his eyes closed.

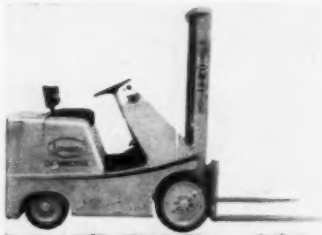
Mr. Lortscher went on to discuss safe unloading of tank cars and trucks: safely spotting them; safe equipment for unloading each kind of material. He covered safety in repairing liquid nitrogen and acid facilities, and the characteristics and safe storage of these materials, as well as safe use in processing, emphasizing the need for a source of fresh air for each working level.

Don't Forget: National Fertilizer Safety Meeting

LaSalle Hotel, Chicago, Illinois

October 20-21

Equipment News Roundup . . .



Gas-powered Electric Fork Lift

Automatic Transportation Company has developed a new line of Dynamotive gas powered-electric driven fork lift trucks, which claim high operating efficiency, low cost of operation and maximum safety.

The gas engine transmits its power through a variable voltage generator to a matched DC series wound electric drive motor, forming a synchronized power package which supplies instant power at the touch of the accelerator. This type of drive enables the gas engine to operate at its most efficient speed at all times, resulting in fuel savings as high as 30%.

Capacities of the new line of Dynamotives range from 4,000 to 10,000 pounds with lifting heights to suit all applications. Fast travel speed of 8.5 m.p.h. and lifting 4,000 pound loads up to 75 f.p.m. permits handling of more tons per hour.

The Dynamotive drive principle eliminates need of a clutch, fluid coupling, fluid torque converter or multiple speed transmission, and permits a smooth ride with fast acceleration.

Additional information about the new Dynamotive is available by circling Number 27 on CF's Information Service card, page 55.

Bag Stacker Bulletin

One man push button loading of box cars and trucks is the subject of Bulletin No. 75 by Power-Curve Conveyor Co., whose portable power-driven conveyor for bags and packages includes a stacker belt so that hand labor is almost wholly eliminated, one man doing the work of four. For your free copy, circle Number 28 on CF's Information Service card, page 55.

Bulk Bin Level Control

A new Bin-Vue level indicator and control which features an easy-off cover and a fail safe device has been announced by Convair.

A limit switch, acting as a fail safe device, is activated 18 times a minute and can be connected for visible or audible control. This switch may also be connected to a relay circuit for automatic control. Failure of any part of the Bin-Vue will alter the signal and stop or start other equipment controlled by the Bin-Vue.

For a copy of Bulletin C-101 describing the control, circle Number 29 on CF's Information Service card, page 55.

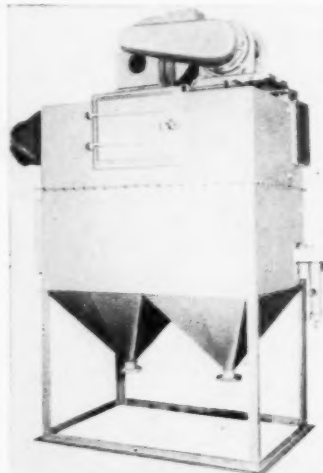
Speed Reducer Book

Link-Belt Company has issued a new 24-page book describing its completely new line of shaft-mounted speed reducers.

"Shaft-Mounted Speed Reducers," Book 2618, contains engineering and selection information on: single reduction drives in six sizes, with nominal ratios of 5 to 1 and capacities up to 50 horsepower; and double reduction drives in seven sizes, with nominal ratios of 15 to 1 and up to 40 horsepower.

The drives can be mounted at angular or horizontal positions, by tie rod or foot mountings. Positive lubrication and precision housings and bearing seals are featured.

For a free copy of Book 2618, circle Number 30 on CF's Information Service card, page 55.



New Dust, Fume Scrubber

Newly-designed cast iron diffuser elements for a hydro precipitator scrubber dust control unit have increased the equipment's efficiency in the trapping of non-condensable and normal dust-type materials below five microns in size, holding the particles in the turbulent scrubbing zone longer and causing the unit to remove more and smaller particles.

The scrubber is claimed to remove low—and sub-micron size dust particles, fumes and odors in fertilizer plants. It handles gases carrying particles of nitrates and phosphates from the blending, fumes from the drying and cooling processes and odors from chemicals used to clean equipment. Efficiency up to 99% has been obtained with 90% of the material below five-micron particle size. Sludge can be removed constantly or intermittently by manual, hydraulic, or mechanical means.

Full information on the A2 Hydro Precipitator Scrubber, manufactured by Johnson-March Corp., dust control engineers, which comes in 15 sizes with capacities ranging between 500 cfm and 40,000 cfm, can be obtained by circling Number 31 on CF's Information Service card, page 55.

Chemical Piping Booklet

Fibercast Company has released a newly published comprehensive bulletin on Fibercast chemical and line pipe, tubing and fittings.

A complete engineering data and general information booklet, in color, its 16 pages cover such subjects as: What it is; production quality control; pipe strengths; engineering data and charts; chemical resistance; specifications; installation procedures, and applications in the chemical, petroleum and other industries.

Copies are available by circling Number 32 on CF's Information Service card, page 55.

Conveyor Elevator Brochure

New brochure available from The Bucket Elevator Company shows construction features of their conveyor elevators, including exclusive cantilever design. This feature permits removal of casing covers, pulleys and belting without disturbing bearings, mechanical seals or other operating machinery.

Their catalog also illustrates various types of buckets, pulleys, etc. available, as well as giving complete range of models, dimensions and capacities.

For your free copy, circle Number 33 on CF's Information Service card, page 55.

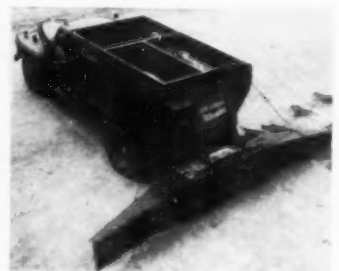
'Mobile Blender' Spreader

Highway Equipment Company is offering a 'New Leader' Mobile Blender to accurately blend and spread three fertilizer materials at the same time. Spreader operator can change the material blend for varying application ratios while in the field.

Three separate feedgates, each with a test box for accurate metering, control the amount of spread. A 7 h.p. gasoline engine drives the distributor fan assembly at a constant rate, regardless of truck speed. The wide 36 inch belt-over-chain conveyor is powered from the drive-shaft-drive synchronized to truck speed for precise per-acre fertilizer requirements. Twin spinners provide uniform spreading pattern to both sides of truck.

Also available is an Auxiliary Granular Hopper that meters and mixes pesticides or trace element materials in granular form into the fertilizer.

For more information on the L-42 S Mobile Blender, circle Number 34 on CF's Information Service card, page 55.



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Equipment News . . .

Rotary Filter Booklet

Dorr-Oliver Incorporated announces availability of a new twenty-four page, two color bulletin, "The Oliver Continuous Rotary Drum Filter for the Process Industries." This comprehensive bulletin describes designs of the five principal types of rotary drum units and their component parts; it details conventional accessories, auxiliaries, media and materials of construction. Bulletin No. 7200 also includes some fifty photographs and line and wash drawings of various filters and components as well as tables of sizes and capacities of each design.

For a free copy, circle Number 35 on CF's Information Service card, page 55.

Vertical Dumper

Essex Conveyors, Inc., is offering specification sheets and literature on their line of vertical dumpers and hydraulic-powered dumpers.

The vertical dumpers are custom designed to hoist loads of free-flowing materials, up to 2500 pounds, to any practical height, dumping the load at a 45-degree angle into overhead hoppers or other receptacles. The self-supporting dumper is designed to occupy minimum floor space, and operates in an automatic lift-dump-return cycle.

Essex 'Hydro Dumpers', designed for same-level discharge, dump batches up to three tons, and can be furnished in stationery or mobile models.

For further information and specifications, circle Number 36 on CF's Information Service card, page 55.

Aisle Calculation Device

Right angle aisle calculations required in specifying fork lift trucks have been ingeniously simplified through the use of a Nomograph devised by Automatic Transportation Company. An easy-to-use chart, the Automatic Nomograph with an accompanying straight edge rule solves fundamental materials handling problems in computing relationships between the dimensions of right angle aisles and relevant lift truck characteristics.

Application of the Nomograph to materials handling problems allows: design and planning of new aisles to the dimensions of the equipment to be used; determining which fork lift truck can operate effectively within the confines of existing aisles; establishing the ideal wheel base for each given load length; elimination of error in calculations.

Inclusion of the Nomograph in specification bulletins just issued on four Transporter Stacker Models by Automatic Transportation marks the first use of this device by a manufacturer of industrial trucks.

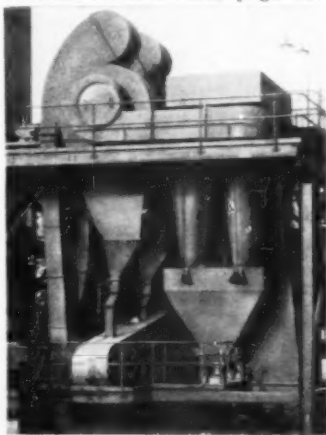
Additional information is available by circling Number 37 on CF's Information Service card, page 55.

Instrument, Equipment Book

Representative items from the wide line of process instrumentation and equipment manufactured by B-I-F Industries, Inc., are described in a new 8-page two-color bulletin issued by the company. The bulletin contains photographs, operational data, and design feature descriptions of twelve varied products for positive control of materials in motion.

Items described are: Flow Tubes for metering; Chronoflo Telemeters for remote metering and control; transistorized Synchro-Scan Systems for multi-function central supervisory control; Rubber-Seated Butterfly Valves; Pneumatic Valve Positioners; Shuntflo Meters for steam, air or gases; Propelflo velocity-type totalizing liquid flow meters; the Conveyflo Meter for automatically and continuously weighing and totalizing belt-conveyed dry materials; and Visible Flow Chlorinizers.

For a free copy of Bulletin #100-R5, circle Number 38 on CF's Information Service card, page 55.



High-Efficiency Classifier

Buell Engineering Co., has announced a new Centrifugal Classifier System which separates dry fines from coarse materials at efficiencies unattainable before in commercial practice. The new classifier has no moving parts, requires little maintenance, and utilizes only 0.04 to 0.5 hp per ton per hr.

High operating efficiencies are attained by utilizing a unique combination of aerodynamic forces for virtually complete separation of fines from larger material. The classifier is claimed to extract from most materials more than 98% of the very fine particles having diameters smaller than 325 mesh (44 micron), with no oversize material in the fines.

The classifier is available in sizes to handle from 100 pounds to 100 tons of material per hour and is particularly recommended for classification applications in the 400-200 mesh range.

Additional information on this centrifugal classifier, and also on new Gravitational Classifier Systems for classification in the 200-10 mesh range, is available by circling Number 39 on CF's Information Service card, page 55.

Materials News . . .

Urea-form Mixture Book

A new 24-page booklet, "Your 'Blue Chip' Fertilizer Program — Manufacturers Handbook," has been announced by Nitro-Form Agricultural Chemicals. The booklet outlines seven years of research into use of ureaform in mixed fertilizers, citing field data from Rhode Island, Pennsylvania and Purdue Universities which backed up laboratory investigations.

In an easily understandable form, the brochure covers all phases of cashing in on this premium mixed fertilizer program: research, production and sales.

For your free copy of this valuable handbook, circle Number 40 on CF's Information Service card, page 55.

Nitrogen Products Folder

An attractive folder that packs into four pages a world of information on specifications, descriptions, uses and shipping information about chemicals produced by the Sohio Chemical Company has just been issued.

This folder spotlights uses of anhydrous ammonia, aqua ammonia, nitric acid, urea and nitrate solutions in the manufacture of industrial and consumer products, and also shows uses of these products in such fields as refrigeration, metallurgy, the fertilizer industry and the paper industry.

As a handy reference source, this Sohio Chemical folder will find frequent uses by those who use these chemical products. For a free copy, circle Number 41 on CF's Information Service card, page 55.

Calcium Nitrate Data Sheet

Hummel Chemical Company, Inc., is now offering a technical grade of calcium nitrate.

A technical data sheet and further information are available by circling Number 42 on CF's Information Service card, page 55.

Fertilizer Conditioner

Sole Chemical Corporation is offering a new technical bulletin outlining the properties of their "Sole-Amite Ag" agricultural grade material used in conditioning fertilizers and as a carrier for pesticide materials. For a free copy, circle Number 43 on CF's Information Service card, page 55.

New Soil Conditioner

Perl-Lome, a special grade of perlite newly developed for soil conditioning and other horticultural uses—and tested successfully at six university experiment stations—is now offered in multiwall bags in sizes for commercial and home use.

A white, feather-light volcanic mineral that is expanded under heat to form tiny, popcorn-like particles, the material keeps soil friable and provides plant life with adequate air and moisture.

For more information circle Number 44 on CF's Information Service card, page 55.

N. P. F. I. Makes New Grants

Maryland—An agreement was reached last month by National Plant Food Institute and the University of Maryland to establish an undergraduate agronomy scholarship at the University, according to Dr. W. H. Garman, NPFI Northeastern regional director.

Each year a junior or senior undergraduate majoring in agronomy will be selected as the recipient of a \$200 cash award, a plaque which will be retained by the University, and a key inscribed with the winner's name.

The award will be based on a candidate's scholastic achievement, extra-curricular activities, and the promise which the recipient holds for future contributions to the field of agriculture.

South Carolina—An intensified soil fertility program, based on soil testing and aimed at encouraging more efficient crop production by farmers through the proper use of lime and fertilizer, has been launched in Edgefield County.

The program is being supported by a \$3,500 grant from the National Plant Food Institute and is being carried out by the South Carolina Agricultural Extension Service and Experiment Station.

A concerted effort will be made to get farmers to follow the fertilizer and lime practices suggested, and all segments of the community are being urged to support the program.

South Carolina—An undergraduate agronomy scholarship has been established at Clemson Agricultural College, it was announced recently by Dr. G. H. Collings, head of the Department of Agronomy at Clemson and by Dr. Samuel L. Tisdale, Southeastern regional director for National Plant Food Institute.

The scholarship, which will consist of a \$200 cash award, a plaque and a key engraved with the name of the recipient, will be awarded each year to a rising senior majoring in the field of agronomy. The selection will be based on scholastic attainment, extra-curricular activities, and the promises which the recipient holds for future contributions to the field of agriculture.

Selection of the student will be made by a committee of faculty members.

Tennessee—A \$2,000 National Plant Food Institute research grant has been awarded to the Tennessee AES

to support studies on yield response of corn to different fertilizer treatments on various soil mapping units and under different rainfall patterns in Tennessee.

Investigations also will be made to determine potential profit under the different fertility, soil, and weather conditions.

The work will be carried out jointly by the Departments of Agronomy and Agricultural Economics of the Tennessee AES.

Information obtained from the studies, Dr. Samuel L. Tisdale, Southeastern Regional Director for the Institute, said, should be of value in determining the most profitable corn fertilization rates on the soil mapping units included in the experiments.

Three soil mapping units will be used in this work. Fertility treatments will be repeated about 20 times on each mapping unit, making a total of about 60 experimental

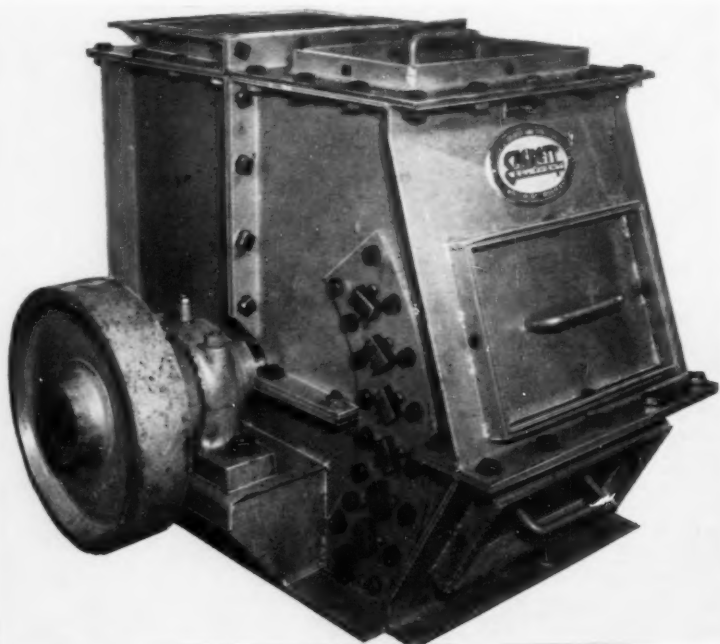
sites from which data will be obtained.

The Experiment Station's research work will be conducted over a 12-month period which began early last month.

Tennessee—An undergraduate agronomy award has been established at the University of Tennessee at Knoxville, it was announced jointly by Dean N. D. Peacock and Professor L. N. Skold of the College of Agriculture, and Dr. Samuel L. Tisdale, National Plant Food Institute Southeastern regional director.

The recipient of the Institute sponsored award will receive \$200, a plaque, and a key engraved with his name. It will be awarded each year to a rising senior majoring in the field of agronomy. Selection of the student will be based on scholastic attainment, extra-curricular activities, and the promise he holds for contributions to agriculture.

Selection of the student will be made by a committee of faculty members.



Sackett Announces New Mill

The A. J. Sackett & Sons Company has just announced its new No. 15 CB Mill. This new all-steel hammerhead chain mill fills a widespread need for a crusher capable of effectively reducing the very hard oversize material from the screen when producing granular fertilizers. Its vigorous cracking action on the

material reportedly produces maximum reclamation of product with a relatively small portion of fines. U. S. and foreign patents are pending. For more complete information, fertilizer manufacturers are invited to write the Sackett Company at 1727 S. Highland Avenue, Baltimore 24, Maryland.

Potash Deliveries Down 5% During 1957-58 Crop Year

Deliveries of potash for agricultural purposes in the United States, Canada, Cuba, Puerto Rico, and Hawaii by the eight American potash producers and importers totaled 3,392,569 tons of salts containing an equivalent of 1,978,636 tons K_2O during the fertilizer year of July 1957 through June 1958, according to the American Potash Institute. This was a decrease of over 5% in salts and K_2O under the preceding fertilizer year. Continental United States took 1,838,292 tons K_2O , Canada, 86,516 tons, Cuba, 14,364 tons, Puerto Rico, 18,708 tons, and Hawaii, 20,756 tons K_2O . These figures include imports of 235,141 tons K_2O for this period, an increase of 15%. Exports to other countries were 185,182 tons K_2O , a decrease of nearly 21%.

Illinois with 192,724 tons K_2O was the leading state for deliveries followed in order by Indiana, Ohio, Georgia, Florida, and Virginia.

Muriate of potash was the principal grade, comprising 93% of the total agricultural potash delivered while sulphate of potash and sulphate of potash-magnesia together made up 7% of deliveries.

Deliveries of potash for agricultural purposes in the United States, Canada, Puerto Rico, and Hawaii totaled 1,947,456 tons of salts containing an equivalent of 1,141,611 tons K_2O during the first six months of 1958, a decrease of nearly 4% in salts and K_2O under the same period in 1957. Continental United States took 1,083,893 tons K_2O , Canada, 34,658 tons, Cuba, 5,160 tons, Puerto Rico, 11,106 tons, and Hawaii, 6,794 tons K_2O . These figures include imports of 97,310 tons K_2O for the first six months of the year, an increase of more than 18% over last year. Exports to other countries were 111,755 tons K_2O , a decrease of 15%.

During the second quarter of 1958, deliveries for agricultural purposes were 561,919 tons K_2O in continental United States, 18,844 tons in Canada, 2,587 tons in Cuba, 10,806 tons in Puerto Rico, and 3,250 tons in Hawaii making a total of 597,406 tons K_2O , a decrease of 2% under last year. Included in these figures are imports of 97,310 tons K_2O for the first six months of the year. Exports of potash to other countries during the second quarter were 61,266 tons K_2O , an increase of more than 5% over last year. Total deliveries for the quarter including imports for

the first six months, were 1,160,834 tons of salts containing an equivalent of 683,395 tons K_2O , a decrease of about 2% under last year.

Invasion of Farm Lands Demands Soil Conservation

Land-eating projects, such as highways and other non-agricultural uses, take over 1,250,000 acres annually. Hence soil conservation, the best possible management of the remaining land, is important. That was the tenor of remarks by Don Williams, U. S. Soil Conservation Service recently to the Association of County Officials.

Fertilizer "Expands" The Small Farm

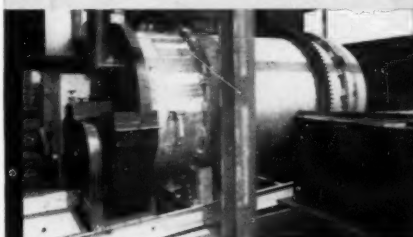
Ermond Hartmans, extension farm management specialist at the University of Minnesota, explains that a small high-yielding farm can be more profitable than a large-scale farm with only average yields. Fertilizer is the answer, and also the ideal way to lower production costs.

About 96% of U. S. farms and ranches are family operated, the same percentage as 30 years ago.

► Ammoniators* ► Coolers ► Dryers
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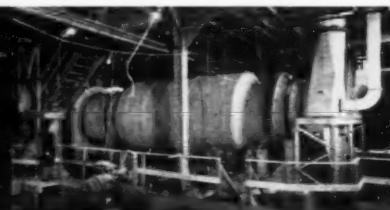
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Renneburg
Dehydro-Mat
Dryer



Built in a wide range of sizes, the Dehydro-Mat Dryer, though comparable in price, out-performs conventional dryers of similar volume. Compact, it is easy to install in a minimum of space. The varying diameter cylinder regulates air and material velocities . . . controls temperature drop and product retention time . . . assures gentle drying.

Other chemical and fertilizer processing equipment manufactured by Renneburg includes: • Ammoniators • Granulators • Dryer Furnaces • Complete Air Handling Systems • Pilot Plants • Dehydro-Mat Combination Dryers and Coolers

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Spencer Introduces Two New Solutions

The development of two new fertilizer solutions linking low salting-out temperatures and low free ammonia content to important raw materials cost savings—equal to several dollars a ton in many instances—has been announced by Spencer Chemical Company. In making the announcement Spencer said its agricultural technical department has been working for some time to achieve this combination of properties which will make a solution both economical and practical to use in all parts of the country, regardless of weather conditions.

Properties of the new solutions, named 'Spensol' 430 (20-68-6) and 440 (22-66-6), should enable granulators of mixed fertilizer to achieve significant savings, Spencer says. Reasons given are: 1. Less sulphuric acid will be required because of the low free ammonia content of the solutions. 2. Eliminating some of the sulphuric acid in a formula makes it possible to derive more P_2O_5 from normal superphosphate. It also means less plant "smog" creation, a problem in many mixing plant areas. 3. In granulating low nitrogen ratios the low free ammonia of the solutions enables the mixer to use more low cost anhydrous ammonia as a nitrogen source. 4. The solutions contain only 6 per cent water, meaning less freight, less drying and recycle time.

Spensol 430 (43.0 per cent nitrogen) has a fixed nitrogen content of 62 per cent and a salting-out temperature of 14° above zero. Spensol 440 has a fixed nitrogen content of 59 per cent and a salting-out temperature of 17° below zero. According to the announcement, previous solutions with comparable salting-out temperatures contained fixed nitrogen in a range from 48 to 54 per cent. Both new solutions are named in accordance with the new solution nomenclature system recently adopted by the industry through the efforts of the National Plant Food Institute. The basic number denotes the percentage of nitrogen in the solution and the numbers in parentheses indicate the percentages of ammonia, ammonium nitrate and urea in the total nitrogen content.

The "dollars and cents" significance of linking a low salting-out temperature with a low free ammonia content was pointed out by Joe Sharp, Spencer's manager of Agricultural Technical Service.



Two bottles of ammoniating solution containing identical percentages of nitrogen are shown after exposure to cold temperature tests at Spencer Chemical Company's Agricultural Technical Laboratory. The cloudy solution at right has "salted-out" and become unusable while the clear liquid in the bottle at left shows no change. Spencer has announced that it is now producing two new solutions which combine low salting-out temperature with low free ammonia content, making them both practical and economical to use in all sections of the country. The solutions are designated as 'Spensol 430' (20-68-6), which has a salting-out temperature of 14 degrees above zero, and 'Spensol 440' (22-66-6), which salts out at 14 degrees below zero.

"The climate in which a mixer operates can have a sizeable effect on his granulation costs," Sharp said. "The colder the climate, the lower the salting-out temperature of the ammoniating solution must be. Heretofore, producing a solution with a low salt-out temperature has required raising the free ammonia content, which then requires the mixer to add additional sulphuric acid to tie it up in the formula. However, the unique properties of our two new solutions, combining low free ammonia with low salting-out temperatures, will make it possible for the mixer to figuratively 'have his cake and eat it.'" Sharp added that "Last winter pointed up the fact to mixers, that, even in the South, it is important to use a solution which has a margin of safety in its salting-out temperature."

Using the granulation of 12-12-12 as an example, Sharp compared the economics of using the new Spensol solutions with current solutions having comparable nitrogen content and salting-out temperatures. "Because of the lower free ammonia content," he said, "You can cut the amount of sulphuric acid needed for neutralization by as much as 133 pounds per ton of 12-12-12. At a delivered cost of \$27 per ton of sulphuric acid, the saving is \$1.68. In addition, this makes enough room in the formula to allow the mixer to derive as much as 1.3 units more of P_2O_5 from normal superphosphate—at a cost differential of 30 cents per unit between normal and triple superphosphate this means an additional 39 cent saving—or a total of \$1.97 per ton in granulating 12-12-12." Sharp

added that the new solutions will contain the special 'Spensol Green' corrosion inhibitor.

Surplus Our Secret Cold War Weapon

At the recent meeting of the American Society of Agronomy, W. M. Myers, University of Minnesota agronomist, said that while farm product surpluses were a factor in depressing the market, they were actually an asset in the cold war. "Since we dare not produce too little" he said "we must always if we can, retain a small margin of productivity over needs. A sputnik in agriculture would be far more damaging to US moral and among our allies than was the Russian first in the satellite program.

Spuds Johnson, the well known Florida AES writer, in an entirely separate occasion, backs up this view with the statement that "despite burdensome surpluses in certain basic commodities, this country's farms must produce at practically full capacity all the time if we are to continue to enjoy the standard of living to which we have become accustomed.

More than 96 per cent of all the crops now grown for human consumption are grown from varieties of seeds unknown 20 years ago.

obituaries

Elton Clark, 71, director of Allied Chemical and Dye, died in the New Jersey drawbridge train accident, September 15.

Eugene Alexander Gilfillin, 83, director of Anderson Fertilizer Co., Anderson, S. C., died in Greenville, S. C. August 23 after a three-week illness.

Waddy T. Mathis, 57, Connecticut AES, died suddenly while on a camping trip, August 20. He was a pioneer in spectographic analysis of major and minor elements in crop chemicals.

Mrs. John C. Mooar, of Atlanta, wife of Sturtevant Mill's Southern representative, died August 29 of coronary thrombosis.

Harwood McCulloch Stanford, 75, for many years in the fertilizer industry with Swift and International Agricultural Corp., and founder of Everglades Fertilizer Co. and Gulf Fertilizer Co., died September 5 at Ft. Lauderdale, Florida.

Did you know that the average U. S. farm worker produced enough food and fiber for the needs of 20.8 persons in 1956? In 1820, each farm worker produced only enough to meet the needs of 4.1 persons. By 1940 this figure had risen to 10.8.

Calspray Releases Fruit Film

As a companion to the film on quality food and fibre previously released by California Spray Chemical, they have announced another in the "Keep America Growing" series

—this one on fruit. It has been in production for three years, and is a 30-minute, 16mm color and sound film. The film will be loaned on request to local Ortho representatives of the home office in Richmond, California.

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STATEMENT OF OWNERSHIP, ETC.
OF
COMMERCIAL FERTILIZER
AND PLANT FOOD INDUSTRY
AS OF OCTOBER 1, 1958

1. Publisher, editor, etc.:
Publisher: Walter W. Brown Publishing Co., Inc., 75 Third St., N.W., Atlanta 8, Ga.
Editor: Clay W. Penick, Jr., 75 Third St., N.W., Atlanta 8, Ga.
Business Manager: V. T. Crenshaw, 75 Third St., N.W., Atlanta 8, Ga.
2. Walter W. Brown Publishing Co., Inc., 75 Third St., N.W., Atlanta 8, Ga.
Ernest H. Abernethy, 75 Third St., N.W., Atlanta 8, Ga.
Virginia T. Crenshaw, 75 Third St., N.W., Atlanta 8, Ga.
Allen W. Hill, Elon A. Abernethy, Jr., James W. Baker, Trustees for Ernest H. Abernethy, Jr., a minor under the laws of Georgia.
Allen W. Hill, Elon A. Abernethy, Jr., James W. Baker, Trustees for James Elon Abernethy, a minor under the laws of Georgia.
3. Bondholders, mortgages, etc.:
None.

Signed: ERNEST H. ABERNETHY, President

Sworn to and subscribed before me, a Notary Public, this 17th day of September, 1958.

MARY C. LAYMAN, Notary Public.

My commission expires February 29, 1960.

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MARKETS

ORGANICS: The heavily sold up situation on fertilizer organics continues with supply in very short position relative to demand. All producers of leather nitrogenous tankage are fully committed for the new season at prices of \$3.25 to \$4.25 per unit of ammonia through Decemoer, and 25¢ per unit of Ammonia higher January/forward. These prices are nominal, and resale prices somewhat higher.

SEWAGE SLUDGE: A major producer in the Midwest continues fully sold up on supplies for the new season at current basis of \$3.10 per unit of ammonia and 50¢ per unit of APA f.o.b. origin. Price for January through May is 25¢ higher per unit of ammonia, and for June 1959 falls to the \$3.10 basis.

CASTOR POMACE: Domestic castor pomace is held at \$36.00 per ton in bags f.o.b. New Jersey shipping point. It is reported that some South American castor meal was recently offered at \$35.00 per ton delivered certain Atlantic Coast ports.

DRIED BLOOD: Unground sacked blood in the Chicago area is around \$7.25 to \$7.50 per unit of ammonia, with the New York market around \$6.00 to \$6.25.

POTASH: At the reduced off-season prices, domestic muriate of potash has been moving in excellent volume, better than the usual seasonal quantities.

GROUND COTTON BUR ASH: Supplies of this 38 to 40% K₂O potash, primarily in the form of carbonate of potash, continue heavily committed for the balance of 1958. Tonnage is still available for January through June shipment at prices approximating the delivered cost per unit

Industry Calendar

DATE	ORGANIZATION	PLACE	CITY
Oct. 13	Ag. Research Inst. Fert. Panel	Sciences Acad. Building	Washington, D. C.
Oct. 16	NFPI Chem. Control Conf.	Shoreham Hotel	Washington, D. C.
Oct. 16-17	Fertilizer Control Officials	Shoreham Hotel	Washington, D. C.
Oct. 20-21	Fertilizer Safety Section	LaSalle Hotel	Chicago, Ill.
Oct. 22-24	Pacific N. W. Fertilizer Assn.	Gearhart Hotel	Gearhart, Ore.
Oct. 29	S. E. Industry Advisory Comm.	Biltmore Hotel	Atlanta, Ga.
Oct. 30	S. E. Fertilizer Conference	Biltmore Hotel	Atlanta, Ga.
Nov. 5-7	Fertilizer Ind. Round Table	Mayflower Hotel	Washington, D. C.
Nov. 9-11	California Fertilizer Assn.	Ambassador Hotel	Los Angeles, Calif.
Nov. 16-18	National Fertilizer Solutions	Netherland Hilton Hotel	Cincinnati, Ohio
Dec. 3-5	Agricultural Ammonia Institute	Marrison Hotel	Chicago, Ill.

K₂O of domestic sulphate of potash.

SUPERPHOSPHATE: Production continues heavy and in larger proportions than for the same period last season. Prices continue firm and generally unchanged from those of last season.

AMMONIUM NITRATE LIME-STONE: Prices continue at previous season's levels, and movement is somewhat ahead of the same period last season because of the late application that extended into July of this year.

SULPHATE OF AMMONIA: Most producers are sold up on supplies for the new season at prices ranging from \$32.00 per ton bulk for coke oven type to \$35.00 per ton for granular synthetic material f.o.b. origin points. Port prices on the Atlantic Coast range from \$36.00 to \$39.00 bulk f.o.b. cars.

GENERAL: Fertilizer manufacturers are stepping up their activity in anticipation of fall business particularly in the Florida area, where a new season is rapidly approaching. Several advances of prices were slated to take place October 1st, and movement of those raw materials af-

ected was in good volume during September, in order to take advantage of current lower basis of price.

Nations Join Cotton-Picking Hands

Hard on the advice that the British Cotton Board and the Cotton Council International have signed up for cooperative cotton sales promotion in England, an agreement in which now 10 nations have joined, comes word that market research specialists from five nations have completed a three-week study of market research activities in the American cotton industry. The National Cotton Council staff outlined the procedures, after which the group moved to Washington for briefings by the Bureau of the Census, USDA and Bureau of Labor Statistics. This was followed by 2 days in New York for visits to textile market research offices.

CF-Staff Tabulated TONNAGE REPORTS

FERTILIZER TONNAGE REPORT (in equivalent short tons) Compiled by Cooperating State Control Officials and Tabulated by COMMERCIAL FERTILIZER Staff

STATE	August		July		April-June Qtr.		January-June		July-December		YEAR (July-June)	
	1958	1957	1958	1957	1958	1957	1958	1957	1957	1956	1957-58	1956-57
Alabama	-----	20,826 ¹	14,162	17,153	490,441	517,785	734,062	808,901	172,721	174,713	906,783	983,614
Arkansas	-----	9,120 ¹	20,612	20,457	150,970	144,336	226,889	265,235	62,752	59,915	289,641	325,150
Georgia	23,557	21,814	68,610	60,490	798,310	759,449	944,618	980,824	269,529	253,559	1,214,417	1,234,383
Kentucky	-----	10,389 ¹	-----	7,081 ¹	290,423	270,257	429,964	444,107	88,771	90,284	518,735	534,391
Louisiana	-----	9,676 ¹	11,368	11,459	127,284	117,568	232,743	200,277	64,192	71,129	296,935	271,406
Missouri	-----	53,079 ¹	16,393	26,013	333,851	240,798	420,615	460,487	335,312	331,343	755,927	791,830
N. Carolina	-----	25,013 ¹	22,354	12,999	823,676	765,579	1,261,685	1,300,353	199,446	216,234	1,461,131	1,516,587
Oklahoma	8,448	4,992	5,689	4,351	35,804	24,968	55,964	52,836	51,436	54,509	107,400	107,345
S. Carolina	11,030	13,416	18,064	11,248	328,955	301,382	615,733	694,571	116,874	122,929	732,607	817,700
Tennessee	-----	16,229 ¹	14,400	18,506	223,068	334,808	307,182	383,457	135,717	141,181	442,899	524,608
Texas	26,311	22,333	32,186	44,039	288,802	187,223	452,327	392,770	213,801	202,406	666,128	595,176
California	(reports compiled quarterly)				426,032	399,214	679,577	663,484	443,658	416,264	1,123,235	1,079,748
Virginia	(reports compiled quarterly)				331,222	323,034	549,773	600,158	140,783	154,075	690,556	754,233
Indiana	(reports compiled semi-annually)						795,506	781,268	284,959	305,917	1,080,465	1,087,185
Washington	(reports compiled semi-annually)						158,286	110,242	77,498	55,709	235,784	165,951
TOTAL	69,346	62,555	223,838	226,715	4,648,838	4,386,401	7,864,924	8,138,970	2,657,449	2,650,167	10,522,373	10,789,137
----- (not yet reported)			* Not compiled		^ Omitted from column total to allow comparison with same period of current year.							

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1958

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